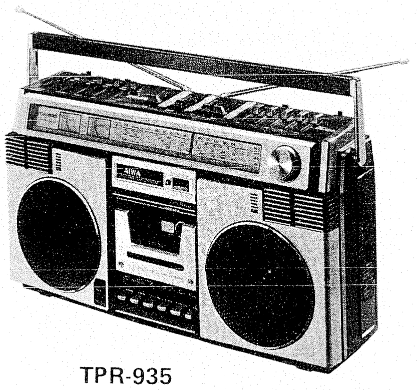
4-BAND RADIO STEREO CASSETTE RECORDER

MODEL NO. TPR-935H,E,K,G
TPR-945H,E,K,G

AIWA®

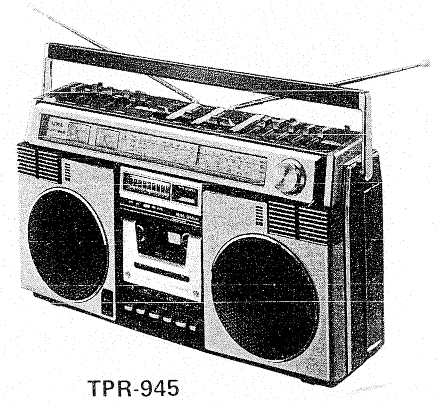
[SERVICE MANUAL]

Code No. 03-935-000-53



TPR-935

Code No. 03 945-000-53



TPR-945

DATE OF ISSUE 8/1979

SPECIFICATIONS

GENERAL

Semiconductors:	TPR-935: 6 ICs, 25 transistors, 1 FET, 12 diodes, 1 LED TPR-945: 11 ICs, 39 transistors, 1 FET, 19 diodes, 10 LED's
Power source:	Batteries DC 12 V (UM-1 x 8) H,E model: AC 110 ~120V/220~240V K,G model: AC 120V/240V (switchable) 50-60Hz
Power consumption:	H model: 14W E,K,G model: 18W
Speakers:	Woofer 120 mmϕ x 2 Tweeter 40 mmϕ x 2
Dimensions (W x H x D):	490 x 273 x 165 (mm)
Weight:	5.7 kg

RADIO SECTION

Frequency range:	FM 87.5~108 MHz SW 5.8~18.5 MHz SW_2 6.8~22.5 MHz SW_1 2.1~7.3 MHz MW 515~1,650 kHz
Intermediate frequency:	FM 10.7 MHz SW, SW_2, SW_1, MW 468 kHz
Sensitivity:	FM (distortion 3%, divation 75 kHz) 7 ± 3 dB (at 88 MHz) 8 ± 3 dB (at 98 MHz) 9 ± 3 dB (at 108 MHz) SW (S/N 10 dB) 29 ± 5 dB (at 5.9 MHz) 16 ± 5 dB (at 1.2 MHz) 12 ± 5 dB (at 18 MHz) SW_2 (S/N 10 dB) 26 ± 5 dB (at 7 MHz) 18 ± 5 dB (at 14 MHz) 13 ± 5 dB (at 22 MHz) SW_1 (S/N 10 dB) 35 ± 4 dB (at 2.3, 4.0, 7.0 MHz)
FM stereo separation:	21 ± 3 dB (at 1 kHz)

TAPE RECORDER SECTION

Recording system:	AC bias
Erasing system:	AC erase
Recording bias frequency:	49 ± 0.5 kHz
Distortion:	Less than 2% (PB) Less than 3% (REC/PB)
Frequency response:	Normal tape 40~12,500 Hz CrO_2 tape 40~15,000 Hz
Signal to noise ratio: (Un-Weighted)	More than 49/43 dB [DC/AC] (PB) More than 44/42 dB [DC/AC] (REC/PB)
Erasing ratio:	More than 50 dB (at 400 Hz)
Separation:	More than 25 dB (at 400 Hz, PB)
Maximum output power:	10W (5W + 5W)
Head:	Permalloy head
Pinch roller pressure:	350 ± 25 g (3.43 ± 0.25 N)
Wow and Flutter:	0.07% (WRMS)
Take-up torque:	50 ± 10 g-cm (0.49 ± 0.1 mN·m)
FF & rewind torque:	$100\,^{+20}_{-10}$ g-cm ($0.98\,^{+0.2}_{-0.1}$ mN·m)

- The specifications and external appearance of this set are subject to change without prior notice.

DISASSEMBLY INSTRUCTIONS

1. **To Remove Cassette Lid**
   1) Remove 2 special screws. (See figure 1)

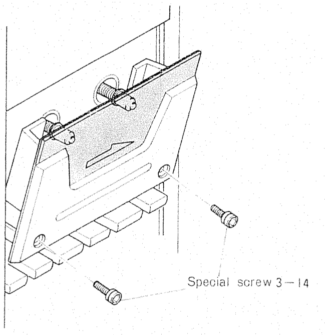

Special screw 3−14

Fig. 1

2. **To Remove Cabinet**
   1) Pull out 9 knobs.
   2) Remove 2 connectors and 6 screws. (See figure 2)

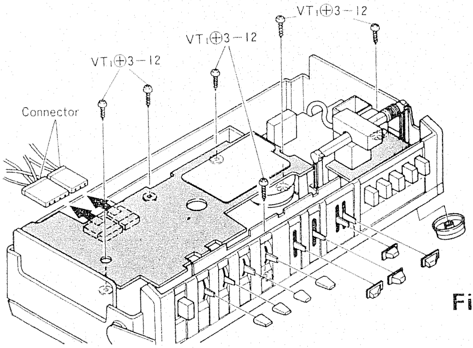

VT1⊕3−12
VT1⊕3−12
VT1⊕3−12
Connector

Fig. 2

3. **To Remove Rec./Pb. Circuit Board**
   1) Remove 5 screws. (See figure 3)

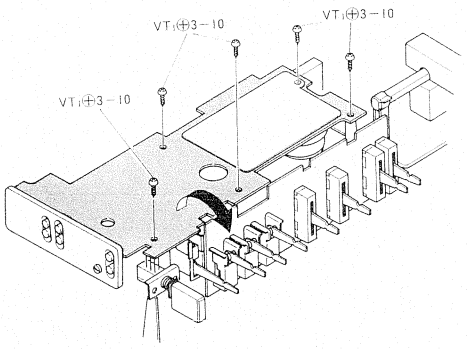
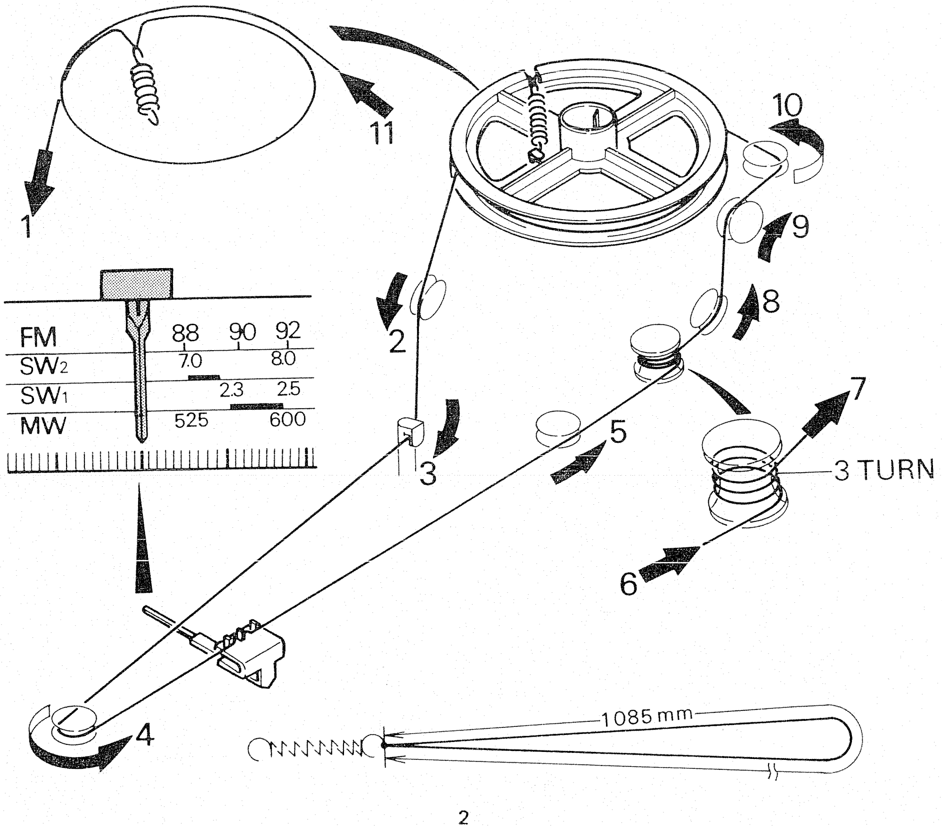
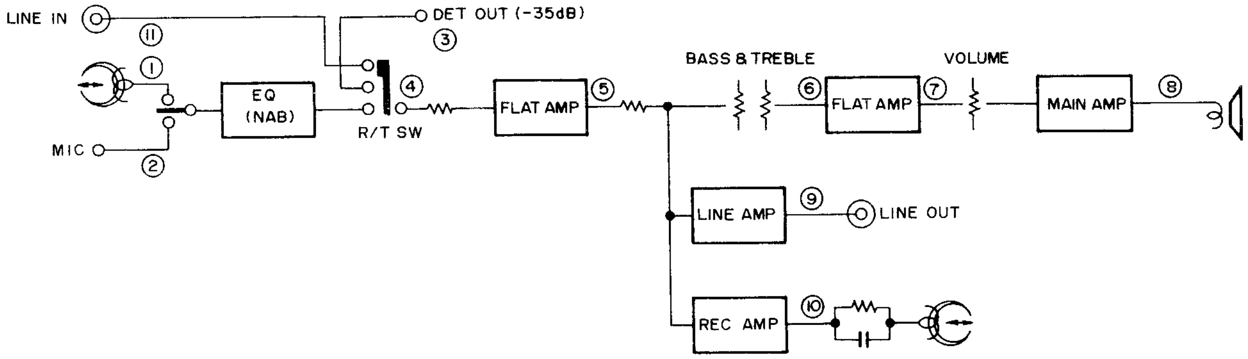

VT1⊕3−10
VT1⊕3−10
VT1⊕3−10

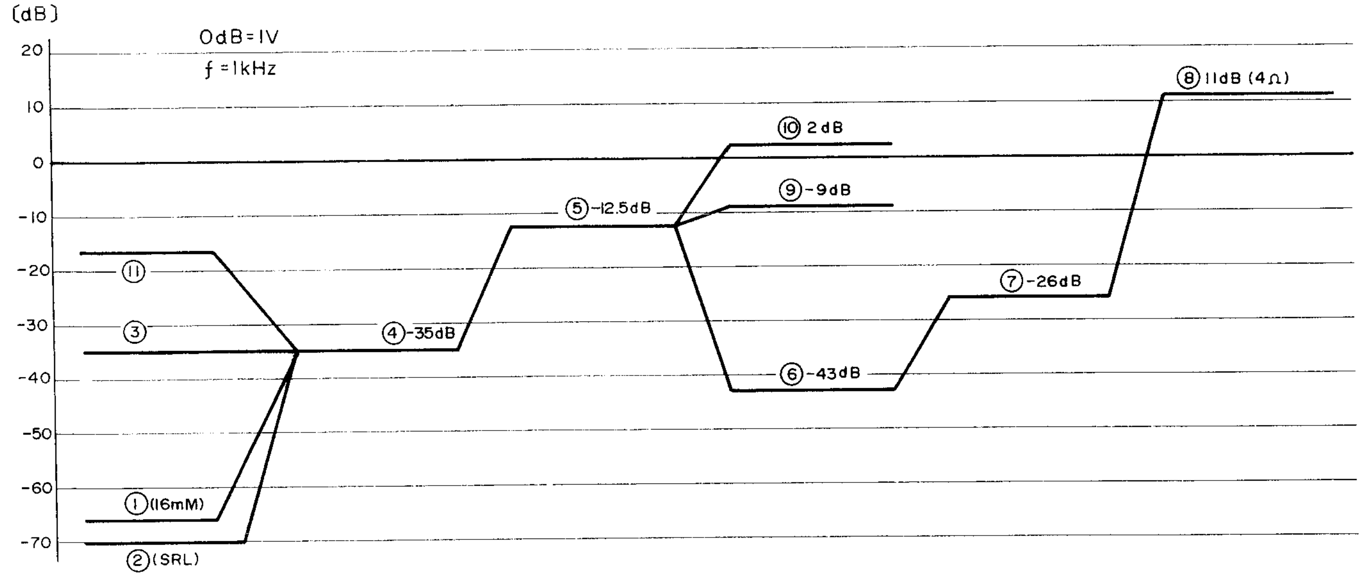
Fig. 3

DIAL CORD STRINGING


1
2
3
4
5
6
7
8
9
10
11
FM
88
90
92
SW2
7.0
8.0
SW1
2.3
2.5
MW
525
600
3 TURN
1085 mm

LEVEL DIAGRAM


LINE IN
⑪
①
MIC
②
EQ (NAB)
DET OUT (-35dB)
③
④
R/T SW
FLAT AMP
⑤
BASS & TREBLE
⑥
FLAT AMP
⑦
VOLUME
MAIN AMP
⑧
LINE AMP
⑨
LINE OUT
REC AMP
⑩

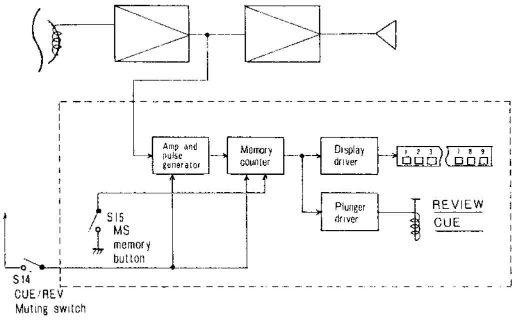


SPECIAL CIRCUITRY DESCRIPTION

Description of MS circuit operations (TPR-945)

This unit adopts a music sensor (MS) which is designed to locate the start of programs with a selection of up to nine programs.
The block diagram of the MS and a description of its operation are given first.

Block diagram

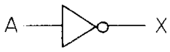

Amp and pulse generator
Memory counter
Display driver
Plunger driver
REVIEW
CUE
S15 MS memory button
S14 CUE/REV Muting switch

Set the number of programs which are to be skipped using the MS memory button. By depressing the CUE/REV button, the CUE/REV muting switch goes ON, the amp and pulse generator are actuated, and pulses are generated at the non-recorded sections between the programs. These pulses serve to count down the contents of the memory counter one by one. When the contents of the memory counter have reached 0, the plunger goes to ON, the CUE/REV button is released and the desired program is played back. Furthermore, when the CUE/REV button is released, the contents of the memory counter are immediately set from 0 to 1.

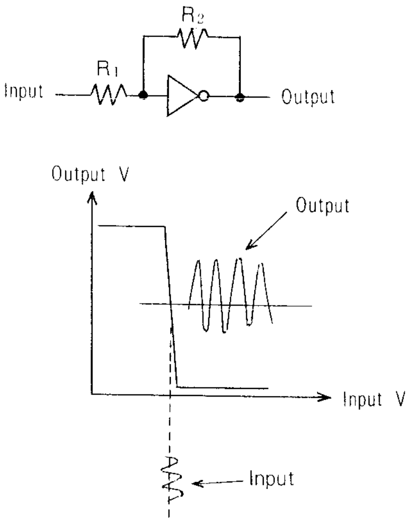
The basic logic circuits are now described.

1. INV circuit

When the input is "H", the output is "L".



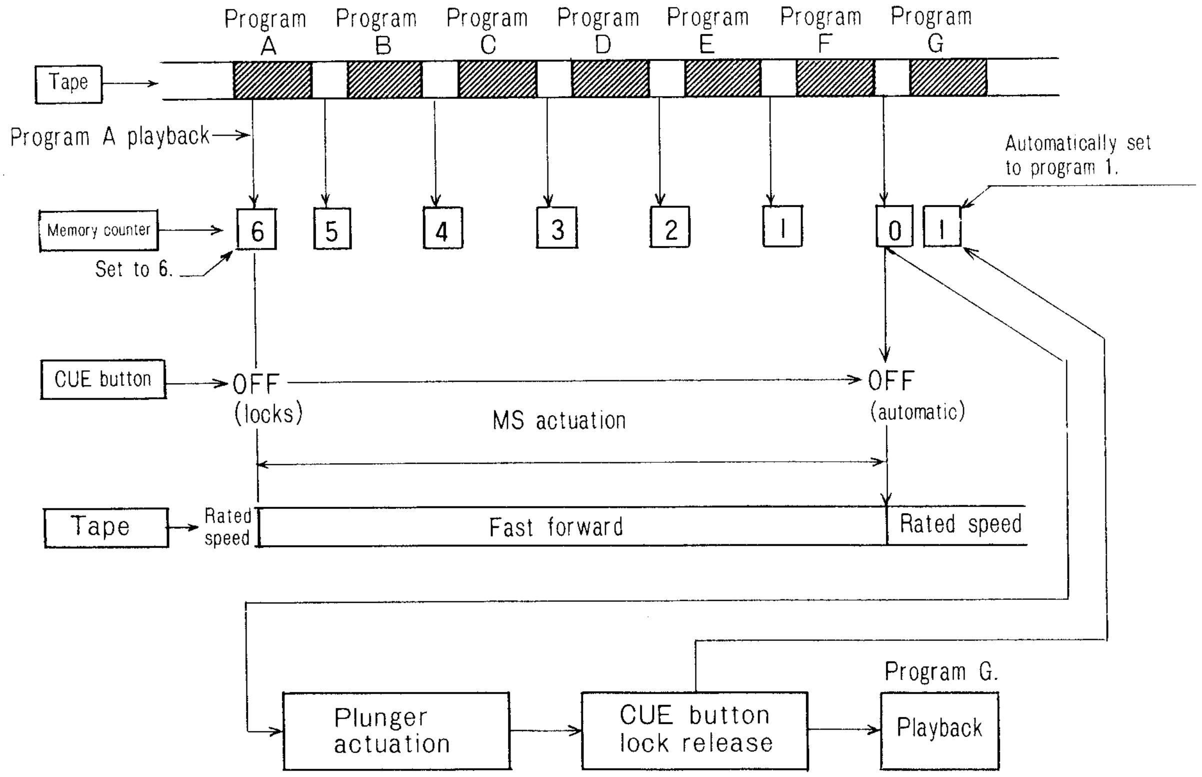
* When the INV circuit is used as an analog amp


R2
R1
Input
Output
Output V
Output
Input V
Input

$$\text{Gain } G = \frac{R_2}{R_1}$$

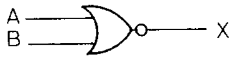
Example of operation

Set the memory counter to 6 when skipping programs A (program being played back), B, C, D, E and F to listen to program G.


Program A
Program B
Program C
Program D
Program E
Program F
Program G
Tape
Program A playback
Automatically set to program 1.
Memory counter
6
5
4
3
2
1
0
1
Set to 6.
CUE button
OFF (locks)
MS actuation
OFF (automatic)
Tape
Rated speed
Fast forward
Rated speed
Program G.
Plunger actuation
CUE button lock release
Playback

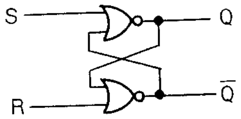
2. NOR circuit

When one or more inputs are "H", the output is "L".



A	B	X
H	H	L
H	L	L
L	H	L
L	L	H

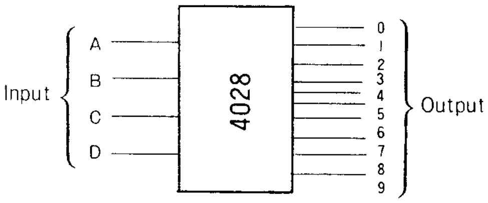
* R–S flip-flop using NOR



S	R (Output)	Q	Q̄
H	L	L	H
L	H	H	L

3. Decoder IC4028 operation

This decoder converts the BCD signal into a decimal signal.

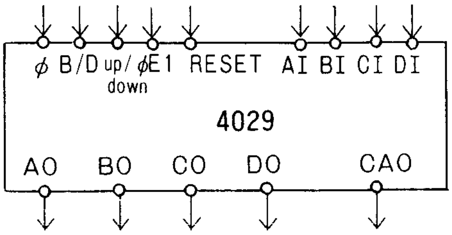


Input				Output									
D	C	B	A	0	1	2	3	4	5	6	7	8	9
L	L	L	L	H	L	L	L	L	L	L	L	L	L
L	L	L	H	L	H	L	L	L	L	L	L	L	L
L	L	H	L	L	L	H	L	L	L	L	L	L	L
L	L	H	H	L	L	L	H	L	L	L	L	L	L
L	H	L	L	L	L	L	L	H	L	L	L	L	L
L	H	L	H	L	L	L	L	L	H	L	L	L	L
L	H	H	L	L	L	L	L	L	L	H	L	L	L
L	H	H	H	L	L	L	L	L	L	L	H	L	L
H	L	L	L	L	L	L	L	L	L	L	L	H	L
H	L	L	H	L	L	L	L	L	L	L	L	L	H

4. IC4029 operation

The 4029 is an up/down counter. When pulses are fed into pin ϕ, they are counted, and the corresponding output appears at pins AO through DO in this IC.

By adding a single pulse, the IC functions as an up counter when the AO through DO outputs increase and as a down counter when the AO through DO outputs decrease.



ϕ: Count input pin

B/D: This indicates 15 if all the AO through DO output pins are "1". If, for instance, the IC is set to the counting mode, and a single input pulse is applied to the ϕ count pin, the AO through DO outputs go to "0" and this pin indicates 0. The counting base is 15 and so it is very difficult to use. Therefore, when considering an instance where a decimal system is used, when this pin is set to "1", the 15 base goes:
13 → 14 → 15 → 0 → 1
and when this pin is set to "0", the decimal base goes:
7 → 8 → 9 → 0 → 1

up/down: Up count with "1"; down count with "0".

ϕE1: Even when pulses for counting are supplied to the ϕ pin with the ϕE1 set at "1", they are not counted. They are counted, however, with the ϕE1 pin set at "0". In the TPR-945, this pin is grounded and set to "0".

RESET: The output pins (AO through DO) are all reset when this pin is set to "1".

AI,BI,CI,DI: Generally when the tape recorder's counter reset button is depressed, the counter goes to "000". However, when this IC is "RESET", it can be set to 0 (1 digit since the TPR-945 is used for MS) but by supplying "1" to the A1 through D1 pins as an input, it is possible to take out the outputs from 0 through 15 at the AO through DO pins. In the TPR-945 the LED corresponding to "1" lights with resetting. Therefore, the AI input pin is set to "1" and the others are set to "0". If it is desired to set to 6 with resetting, the LED corresponding to 6 lights once the DI, CI, BI and AI pins are set to "0", "1", "1" and "0" by a binary code.

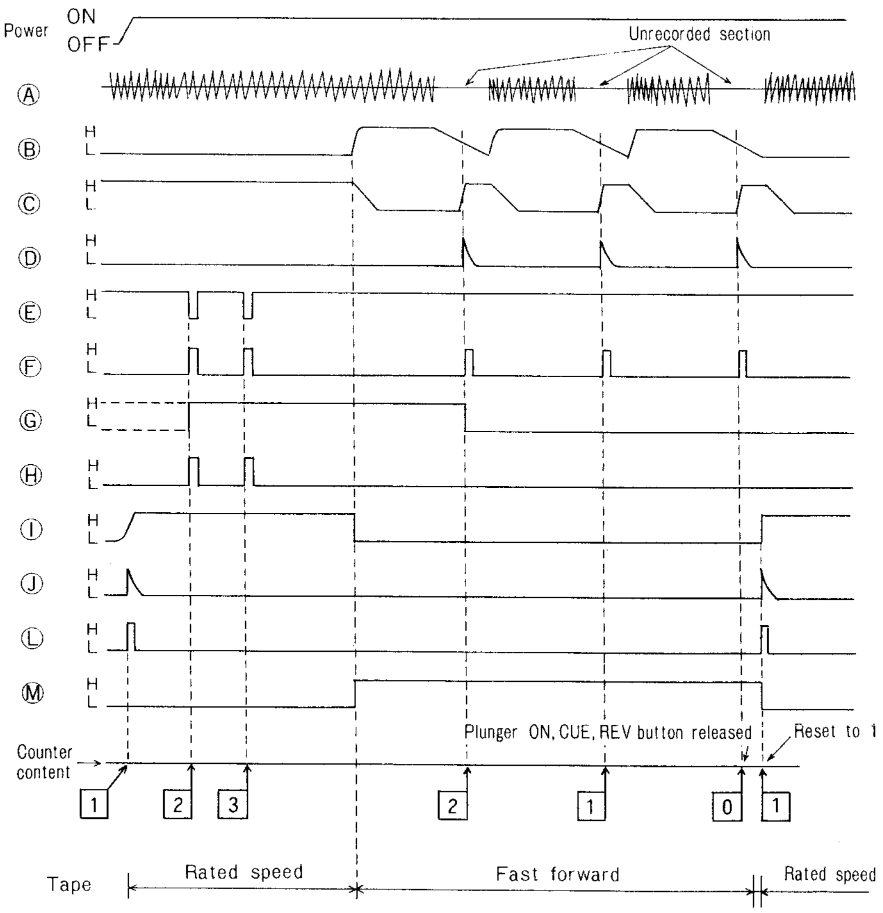
AO,BO,CO,DO: The pulses entering the ϕ pin are counted and these are fed out to these pins with a binary code. Therefore, they are added with an up count and subtracted with a down count.

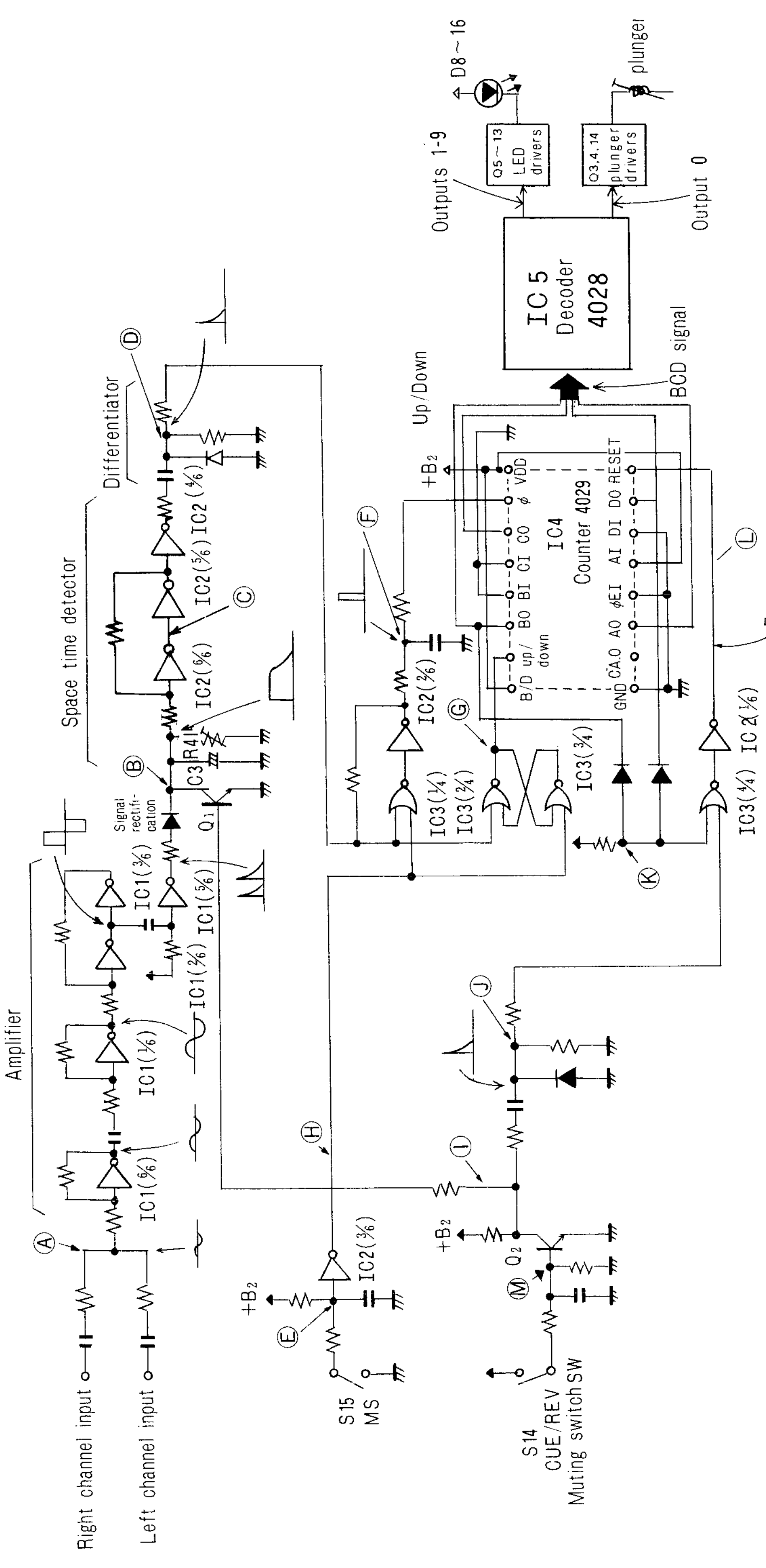
CAO: This pin is for increasing the digit but it is not used in the TPR-945.

The operation of the IC4028 and 4029 have now been outlined. When they are used in the TPR-945, their basic operations are as follows.

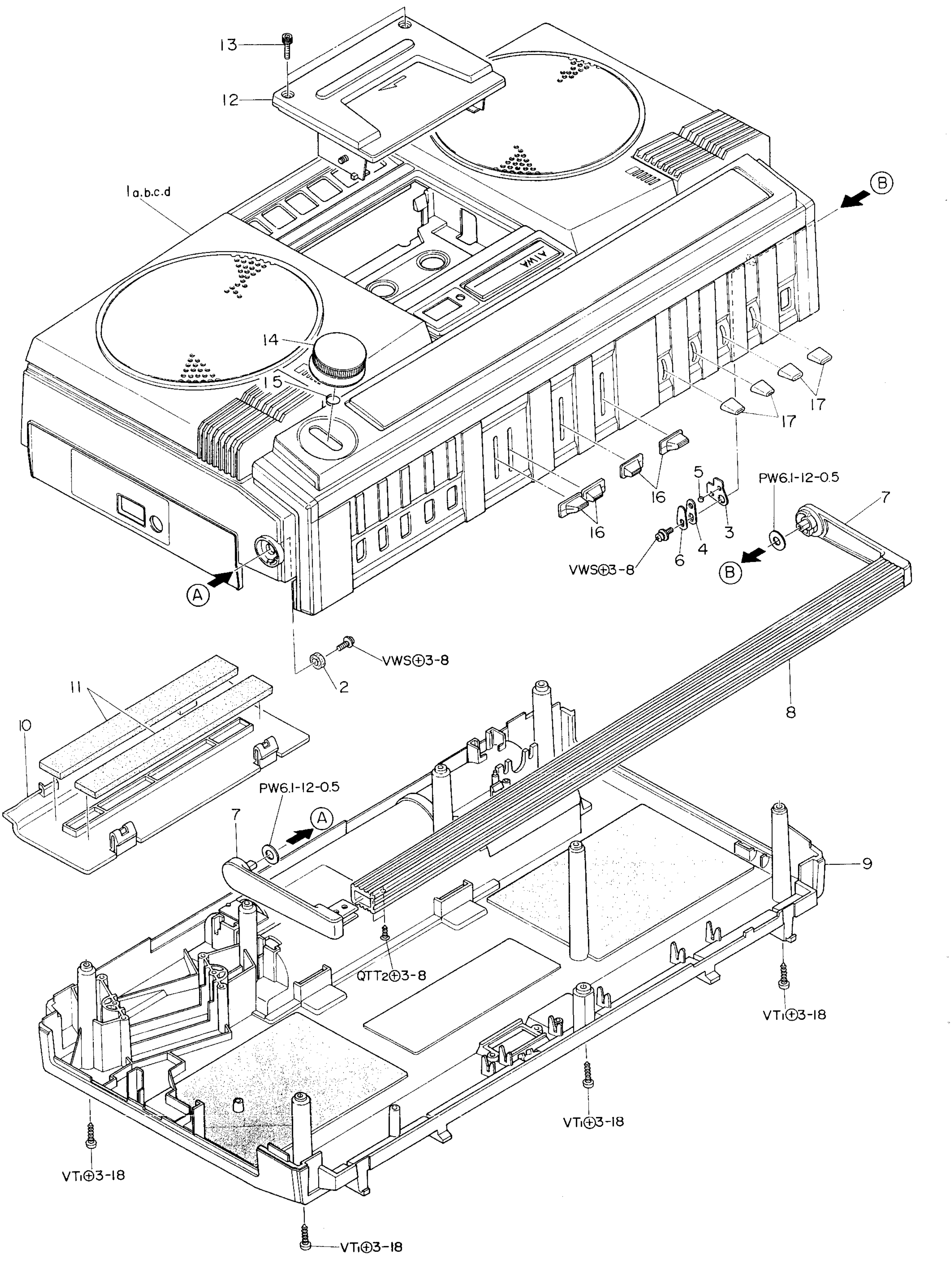
1) When the MS switch is set to ON and the mode selector switch is set to TAPE, power is supplied to the ICs.
2) "1" is applied to the RESET pin and the DO through AO pin outputs are reset.
   The reset indication for the DI, CI, BI and AI pins is "0", "0", "0" and "1". The outputs are applied to the D through A input pins of IC4028 and the transistor for the LED drive connected to 01 goes to ON. The LED lights.
3) The up/down indicator circuit output is at "0" but it is set to "1" when the up switch for the MS is depressed once, and operation is provided as an up counter.
4) The pulses which are fed out from the MS memory button a little time later enter the ϕ count input pin, and an output, which is added to pins DO through AO, is fed out.
5) The LEDs which correspond to the 4) DO through AO outputs light up in succession with the D through A inputs.
6) The MS memory button is kept depressed and the DO through AO outputs are set to "1", "0", "0" and "1" (9), and when the button is depressed again once, "1" enters the RESET input and resetting is carried out. Indication is provided with the LED corresponding to 1 lighting. (This is the same operation as in 2).)
7) When the REW (EF) button is depressed, the output cancel transistor in the amplifier and waveform shaper is set to OFF.
8) The unit is now set to the REVIEW (CUE) mode under 7) and so the signal which has entered from the RPH passes through the amplifier and waveform shaper, the output is "1" for the non-recorded sections and "0" for the recorded sections, and the signal enters the ϕ pin.
9) The amplifier and waveform shaper signal enters the ϕ input pin and the up/down indicator. For this reason the output was set to "1" under 3), but when the amplifier and waveform shaper output is set to "1", the up/down indicator output goes to "0" and the IC functions as a down counter.
10) The timing by which the amplifier and waveform shaper output "1" enters the ϕ input pin and up/down pin of IC4029 is such that the output enters the up/down pin first and then the ϕ pin after the up counter or down counter settings. In other words, the output is delayed to the ϕ pin.
11) A single pulse enters ϕ when a non-recorded section on the tape is reached. This is subtracted from the number which was originally set and this state is indicated by the LED display on the front panel.
12) When all the DO through AO outputs are "0" (0), the solenoid is attracted and the REW (FF) button is released.
13) "1" enters the RESET pin, the counter is reset and the LED corresponding to 1 lights.

Timing chart where three programs are skipped




Right channel input
Left channel input
Ⓐ
Amplifier
IC1(6/6)
IC1(1/6)
IC1(2/6)
IC1(3/6)
IC1(5/6)
Signal rectification
Q1
Ⓑ
C3
R41
IC2(6/6)
Ⓒ
IC2(5/6) IC2(4/6)
Space time detector
Differentiator
Ⓓ
S15
MS
Ⓔ
+B2
IC2(3/6)
Ⓗ
Ⓘ
Ⓙ
Q2
Ⓜ
S14
CUE/REV
Muting switch SW
Ⓕ
IC2(2/6)
IC3(1/4)
IC3(2/4)
Ⓖ
IC3(3/4)
Ⓚ
IC3(4/4)
IC2(1/6)
Ⓛ
+B2
Up/Down
B/D up/down
BO BI CI CO ϕ VDD
IC4
Counter 4029
GND CA.O AO ϕEI AI DI DO RESET
IC5
Decoder
4028
BCD signal
Outputs 1-9
Output 0
Q5~13
LED
drivers
Q3,4,14
plunger
drivers
D8~16
plunger

EXPLODED VIEW–1


13
12
1a.b.c.d
14
15
Ⓑ
17
17
16
16
5
3
4
6
VWS⊕3-8
PW6.1-12-0.5
7
Ⓑ
Ⓐ
VWS⊕3-8
2
8
11
10
PW6.1-12-0.5
7
Ⓐ
9
QTT2⊕3-8
VT1⊕3-18
VT1⊕3-18
VT1⊕3-18
VT1⊕3-18

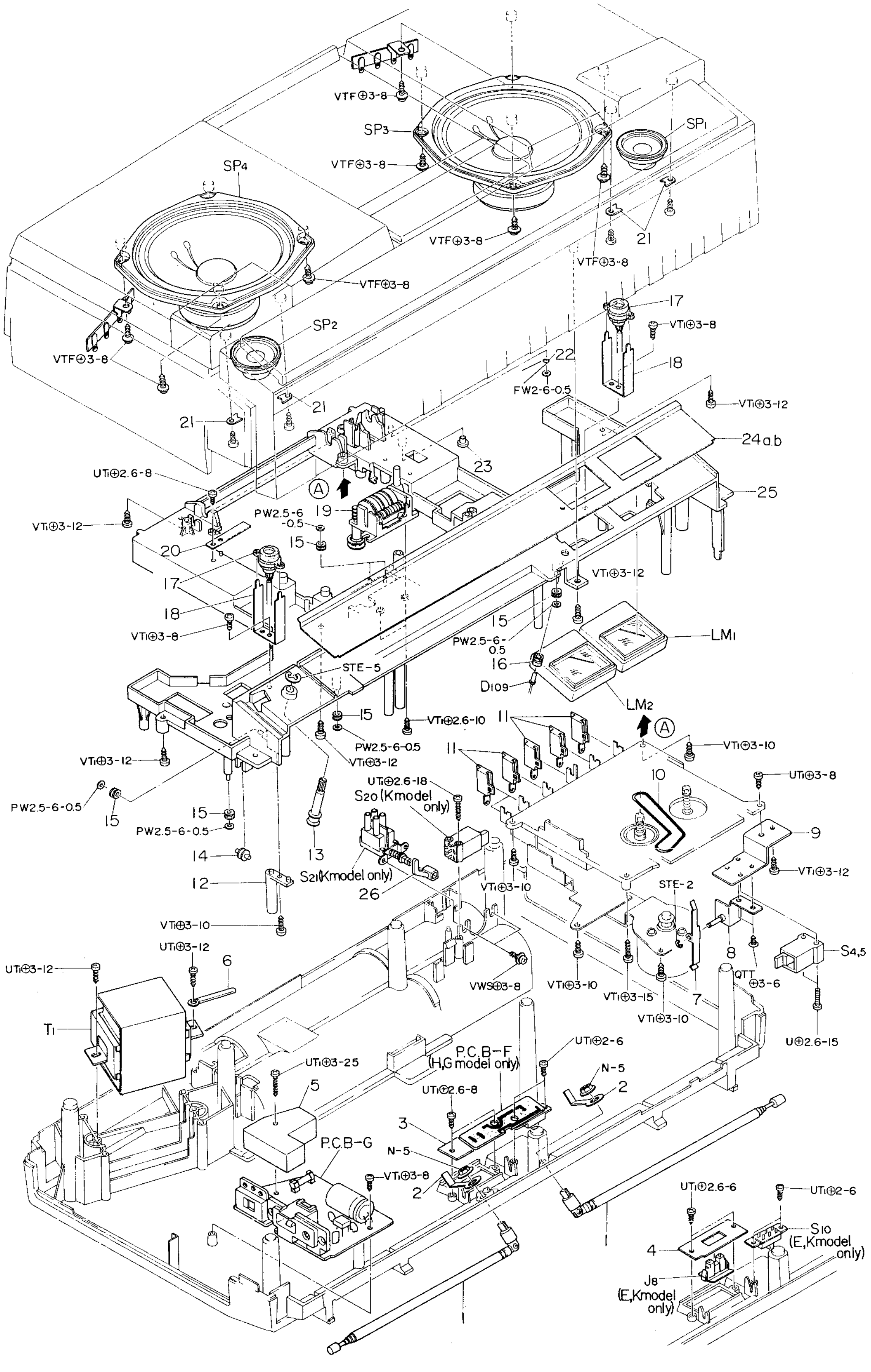
PARTS LIST

MECHANICAL PARTS

■ * mark in this part list shows exclusive part (which is used) for only Model TPR-935.

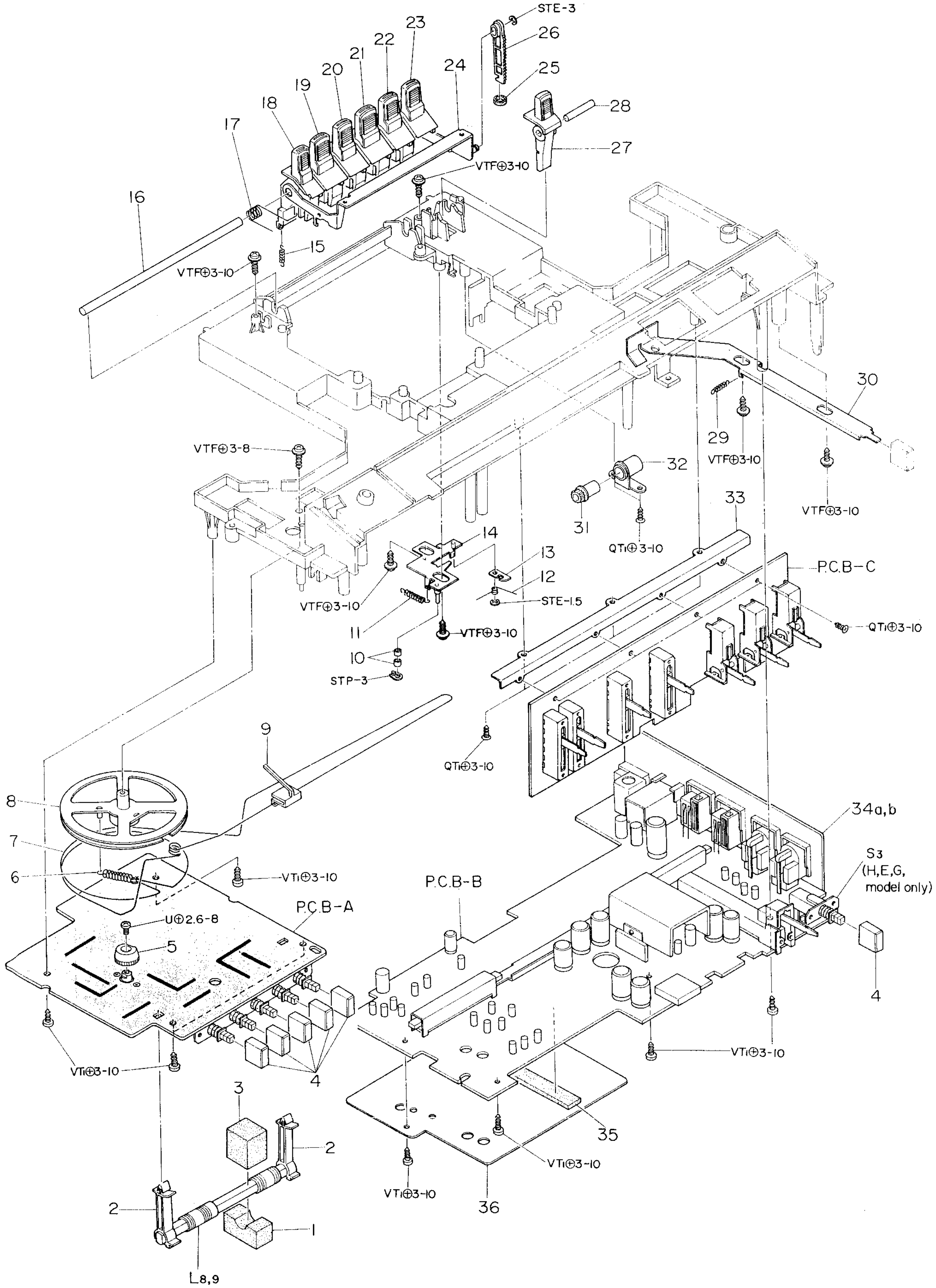
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1-1a	09-017-657-01		Main cabinet ass'y ="H" model	*	1
1-1b	09-017-658-01		Main cabinet ass'y ="E" model	*	1
1-1c	09-017-659-01		Main cabinet ass'y ="K" model	*	1
1-1d	09-017-660-01		Main cabinet ass'y ="G" model	*	1
	82-551-048-01		Cabinet, Main (H,G model only)	*	1
	82-551-060-21		Cabinet, Main (E model only)	*	1
	82-551-061-11		Cabinet, Main (K model only)	*	1
	82-551-053-01		Blind plate, Jack (H,G model only)	*	1
	82-551-054-01		Name plate, AC jack (H model only)	*	1
	82-551-071-01		Name plate, AC jack (E model only)	*	1
	82-551-062-01		Name plate, AC jack (K,G model only)	*	1
	82-551-052-01		Grille, Woofer	*	2
	82-551-051-01		Ring, Woofer	*	2
	82-551-038-01		Badge, AIWA	*	1
	82-551-070-01		Plate B, Counter	*	1
	82-534-048-01		Plate, Cassette	TRP-980	1
	82-551-043-01		Name plate, Operation	*	1
	82-551-045-01		Plate, Auto replay	*	1
	82-551-024-01		Decorative plate	*	1
	82-551-007-01		Panel, Side (R)	*	1
	82-551-006-01		Panel, Side (L)	*	1
	82-551-004-01		Window, Dial	*	1
1-2	82-461-366-01		Felt, Carrying handle	TPR-930	1
1-3	82-461-353-01		Actuating plate, Carrying handle	TPR-930	1
1-4	82-461-303-01		Pressure plate, Carrying handle	TPR-930	1
1-5	87-073-006-01		Steel ball		1
1-6	82-461-324-01		Pressure plate spring, Carrying handle	TPR-930	1
1-7	82-551-014-01		Handle	*	2
1-8	82-551-042-01		Handle grip	*	1
1-9	09-017-656-01		Back cover ass'y	*	1
	82-551-002-01		Cabinet, Rear	*	1
	82-551-213-01		Plate, Battery	*	1
	82-551-215-01		C spring, Battery	*	1
	82-222-036-01		Spring, Battery		1
	87-038-032-01		Plate, Battery		1
1-10	82-551-003-01		Battery room lid	*	1
1-11	82-533-223-01		Cushion, Battery room lid	TPR-920	2
1-12	09-017-610-01		Cassette lid ass'y	*	1
	87-081-895-01		Decorative screw		2
	82-541-264-01		P spring R, Cassette holder	TPR-950	1
	82-541-265-01		P spring L, Cassette holder	TPR-950	1
	82-461-319-01		Cushion, Cassette lid	TPR-930	1
1-13	87-081-895-01		Special screw 3-14		2
1-14	82-538-041-01		Knob, Tuning	TPR-225	1
1-15	82-429-237-01		Knob, Spring	TPR-107	1
1-16	82-551-012-01		Knob A, Volume	*	4
1-17	82-534-043-01		Knob, Lever switch	TPR-980	4

EXPLODED VIEW–2


VTF⊕3-8
SP3
VTF⊕3-8
SP1
SP4
21
VTF⊕3-8
VTF⊕3-8
VTF⊕3-8
17
VTi⊕3-8
SP2
VTF⊕3-8
22
FW2-6-0.5
18
21
21
VTi⊕3-12
24a.b
23
UTi⊕2.6-8
Ⓐ
25
19
PW2.5-6-0.5
VTi⊕3-12
15
20
VTi⊕3-12
17
18
VTi⊕3-8
15
PW2.5-6-0.5
LM1
16
D109
STE-5
LM2
15
VTi⊕2.6-10
Ⓐ
11
VTi⊕3-10
11
PW2.5-6-0.5
VTi⊕3-12
VTi⊕3-12
UTi⊕2.6-18
UTi⊕3-8
S20 (K model only)
10
PW2.5-6-0.5
15
15
PW2.5-6-0.5
9
14
13
VTi⊕3-12
S21(K model only)
12
26
VTi⊕3-10
STE-2
VTi⊕3-10
UTi⊕3-12
8
S4,5
6
UTi⊕3-12
QTT ⊕3-6
VWS⊕3-8
VTi⊕3-10
VTi⊕3-15
7
VTi⊕3-10
T1
U⊕2.6-15
UTi⊕2-6
P.C.B-F (H,G model only)
UTi⊕3-25
N-5
5
UTi⊕2.6-8
2
3
P.C.B-G
N-5
VTi⊕3-8
2
UTi⊕2.6-6
UTi⊕2-6
S10 (E,K model only)
4
1
J8 (E,K model only)
1

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1	87-043-039-01		Whip antenna		2
2-2	82-551-245-01		Terminal plate, Antenna	*	2
2-3	87-033-139-01		External antenna terminal (H,G model only)		1
2-4	82-463-088-01		Terminal plate (E,K model only)	TPR-900	1
2-5	82-551-246-01		Cover, Fuse	*	1
2-6	87-038-039-01		Wire binder		1
2-7	82-551-219-01		Selector plate spring, CrO_2	*	1
2-8	82-551-270-01		CrO_2 plate spring holder ass'y	*	1
2-9	82-551-273-01		Holder, Power switch B	*	1
2-10	82-445-250-01		Rubber belt, Relay	TPR-250	1
2-11	82-541-229-01		Selector knob	TPR-950	6
2-12	82-541-274-01		Supporter, Circuit board	TPR-950	1
2-13	82-551-202-01		Shaft, Tuning	*	1
2-14	82-439-317-01		Roller	TPR-300	2
2-15	81-385-014-01		Roller		6
2-16	82-463-216-01		Rubber bushing	TPR-900	1
2-17	87-064-084-01		ECM holder		2
2-18	82-551-266-01		Metal fitting, ECM	*	2
2-19	87-040-110-01		Counter		1
2-20	82-551-263-01		P spring, Cassette-up	*	1
2-21	82-551-275-01		Speaker clamp ass'y	*	4
2-22	82-553-216-01		P spring, ATS	TPR-945	1
2-23	82-534-254-01		Lock pin, Power switch lever	TPR-980	1
2-24a	82-551-056-01		Dial plate H (H,G model only)	*	1
2-24b	82-551-063-01		Dian plate E (E,K model only)	*	1
2-25	82-551-267-01		Radio chassis, EX	*	1
2-26	82-539-213-01		Power switch sub lever (K model only)	TPR-905	1

EXPLODED VIEW–3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VTF⊕3-10
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VTF⊕3-10
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VTF⊕3-10
VTF⊕3-8
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VTF⊕3-10
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QTI⊕3-10
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P.C.B-C
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STE-1.5
VTF⊕3-10
QTI⊕3-10
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VTF⊕3-10
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STP-3
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QTI⊕3-10
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34a,b
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VTI⊕3-10
S3
(H,E,G, model only)
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P.C.B-B
P.C.B-A
U⊕2.6-8
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VTI⊕3-10
VTI⊕3-10
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VTI⊕3-10
VTI⊕3-10
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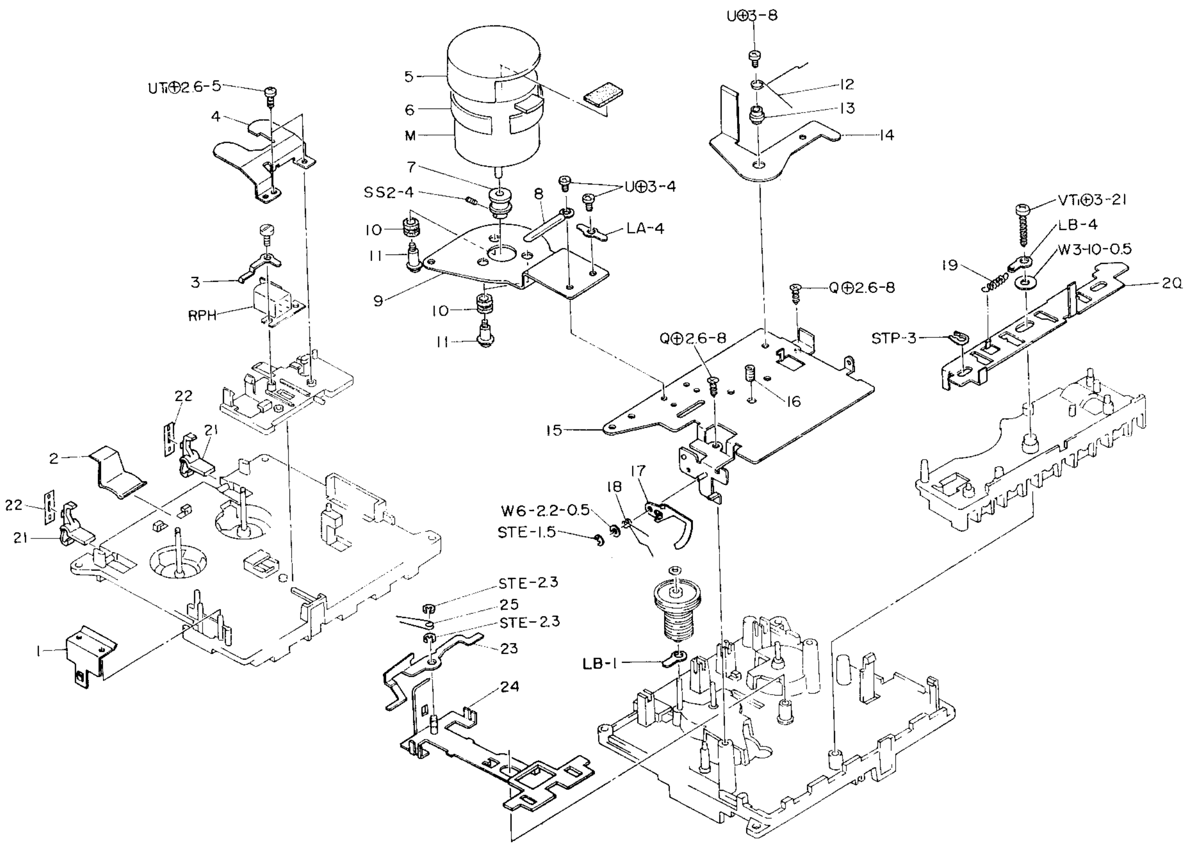
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-551-265-01		Cushion, Bar antenna	*	1
3-2	82-532-209-01		Holder, Bar antenna		2
3-3	82-536-215-01		S cushion	TPR-620	1
3-4	82-551-016-01		Push button, BAND	*	6
3-5	82-439-331-01		Joint, Drum	TPR-300	1
3-6	82-541-291-01		E spring, Dial	TPR-945	1
3-7	87-096-045-01		Dial string		1
3-8	82-439-310-01		Drum	TPR-300	1
3-9	82-553-012-01		Pointer, Tuning	TPR-945	1
3-10	87-085-135-01		Bushing 3-4-5		2
3-11	82-553-214-01		E spring, ATS	TPR-945	1
3-12	82-541-250-01		T spring, Sleep switch	TPR-950	1
3-13	82-530-223-01		Lock plate	TPR-216	1
3-14	82-553-205-01		Slide plate ATS ass'y	TPR-945	1
3-15	82-541-288-01		E spring, Push-key	TPR-950	1
3-16	82-551-203-01		Shaft, Push button	*	1
3-17	82-551-223-01		T spring, Cassette box	*	1
3-18	82-553-019-01		Push-key, PAUSE	TPR-945	1
3-19	82-553-018-01		Push-key, STOP	TPR-945	1
3-20	82-553-017-01		Push-key, FF	TPR-945	1
3-21	82-553-016-01		Push-key, PLAY	TPR-945	1
3-22	82-553-015-01		Push-key, REW	TPR-945	1
3-23	82-553-014-01		Push-key, REC	TPR-945	1
3-24	82-551-241-01		Lever ass'y	*	1
3-25	82-461-319-01		Cushion, Cassette lid	TPR-930	1
3-26	82-541-240-01		Oil damper lever	TPR-950	1
3-27	82-541-026-01		Push-key, Stand-by	TPR-950	1
3-28	82-541-231-01		Shaft, Stand-by	TPR-950	1
3-29	82-283-289-01		Spring, Play idler lever (K model only)	TP-770	1
3-30	82-551-268-01		Power switch lever (K model only)	*	1
3-31	82-534-264-01		Gear, Oil damper	TPR-980	1
3-32	82-534-250-01		Metal fitting ass'y, Oil damper	TPR-980	1
3-33	82-551-221-01		Holder, Volume circuit board	*	1
3-34a	82-551-685-01		Jack plate H ass'y (H, G model only)	*	1
3-34b	82-551-057-01		Jack plate K (E,K model only)	*	1
3-35	82-416-260-01		M cushion	TPR-601	1
3-36	82-551-662-01		Shield plate	*	1

EXPLODED VIEW–4

As this is a PM-1 mechanism, the exploded view is omitted (see the supplement PM-1 mechanism adjustment manual). The exploded view bellow shows the additional mechanism of the PM-1. Also shown are the attachments of the motor and a list of such.



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
4-1	82-541-284-01		Pressure plate spring, Wire	TPR-950	1
4-2	82-534-297-01		Pressure plate spring, Cassette	TPR-980	1
4-3	82-539-206-01		Earth plate, Erase head	TPR-905	1
4-4	82-541-628-01		Shield plate, Head	TPR-950	1
4-5	82-541-612-01		Motor shield cap	TPR-950	1
4-6	82-551-617-01		Motor shield plate A	*	1
4-7	87-071-025-01		Motor pulley		1
4-8	87-038-039-01		Wire binder		1
4-9	82-551-261-01		Holder, Motor	*	1
4-10	87-087-019-01		Rubber cushion		3
4-11	87-081-483-01		Motor screw, M2.6		3
4-12	82-534-271-01		T spring, REC lever	TPR-980	1
4-13	82-534-212-01		Collar, REC lever	TPR-980	1
4-14	82-551-208-01		Lever, REC	*	1
4-15	82-551-242-01		Flywheel bearing plate ass'y	*	1
4-16	82-385-311-01		Thrust screw	AD-6300	1
4-17	82-534-275-01		Lock plate, Stand-by	TPR-980	1
4-18	82-534-270-01		T spring, PAUSE	TPR-980	1
4-19	82-283-289-01		Spring, Play idler lever	TP-770	1
4-20	82-551-264-01		Plate, Auto-replay	*	1
4-21	82-439-261-01		REC blocking lever	TPR-300	2
4-22	82-560-235-01		Plate spring, REC blocking lever		2
4-23	82-439-271-01		CrO_2 selector lever	TPR-300	1
4-24	82-494-314-01		Brake plate ass'y	AF-5600	1
4-25	82-534-266-01		T spring, CrO_2 selector lever	TPR-980	1

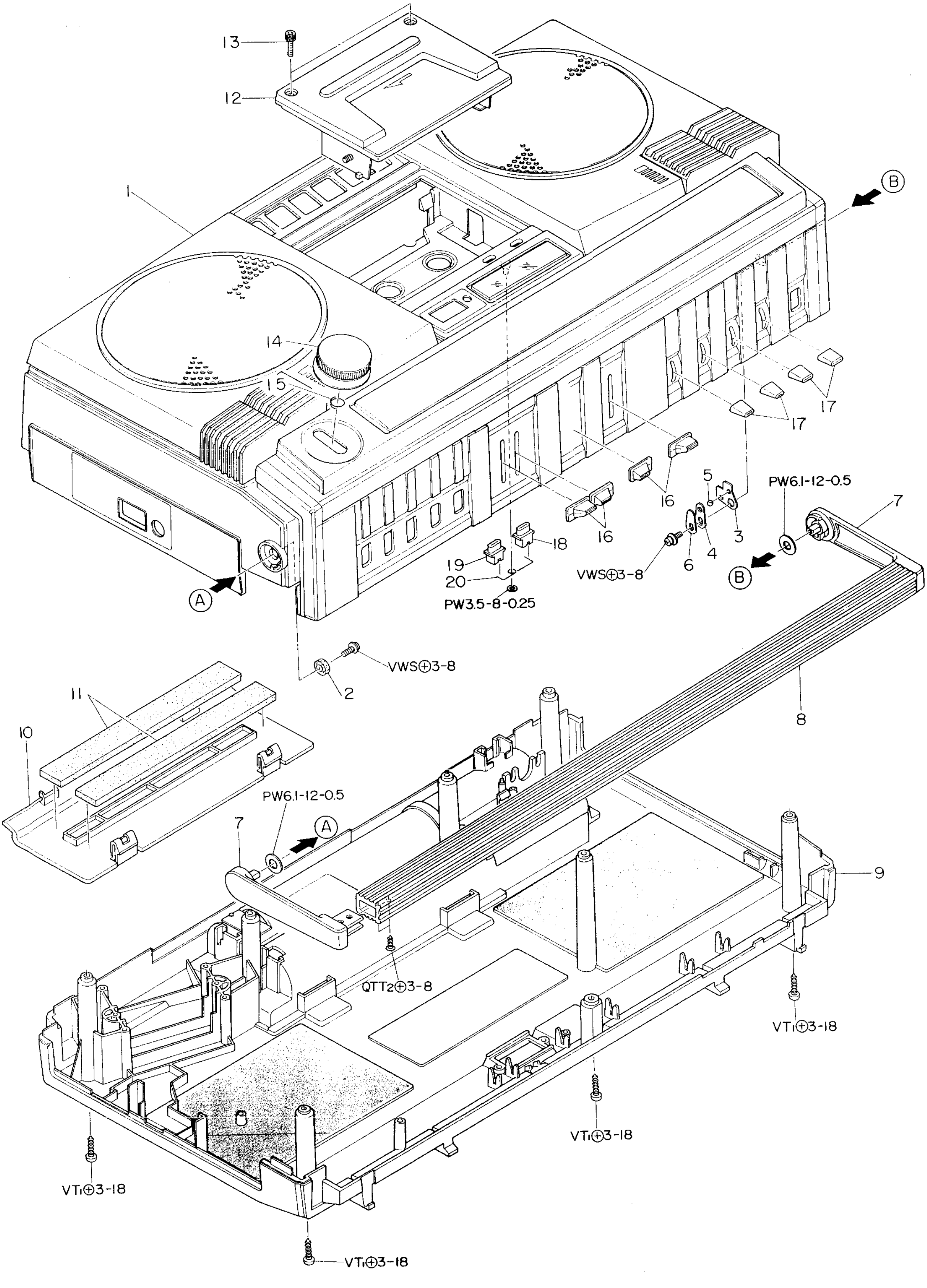
The following is the part number list of the ☆☆☆☆☆ marked parts of the PM-1 mechanism.

Ref. No.	Part No.	Description	Q'ty
1-13	82-385-332-11	Spring B, Head adjusting	1
1-14	87-046-159-01	Rec./Pb head	1
1-25	82-540-315-01	Slide lever, Cassette up	1
1-31	87-046-127-01	Erase head	1
2-31	87-253-092-11	Mounting screw, REC plate spring	1
2-32	82-534-298-01	Plate spring, REC	1
2-33	82-439-228-31	Lever, REC	1
2-49	82-541-278-01	Belt, Main	1
2-50	82-439-489-01	Flywheel ass'y	1
2-51	82-385-314-21	Rubber belt	1
2-60	82-385-309-21	Worm gear B ass'y	1

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1	82-551-856-01		Printed indiv., Packing	*	1
2	82-551-857-01		Cushion L, Printed indiv.	*	1
3	82-551-858-01		Cushion R, Printed indiv.	*	1
4	87-051-137-11		Poly-vinyl sack (for AC power cord) (H,E,K model only)		1
5	87-056-535-01		Air-cap sack (G model only)		1
6	87-056-607-01		Poly-vinyl sack (for case)		1
7a	82-551-904-01		Instructions booklet (H model only)	*	1
7b	82-551-907-01		Instructions booklet (E model only)	*	1
7c	82-551-909-01		Instructions booklet (K model only)	*	1
7d	82-551-910-01		Instructions booklet (G model only)	*	1
8	82-551-905-01		Label, POP	*	1
9	87-051-171-11		Poly-vinyl sack (for instruction)		1
10	87-056-008-11		Label, AC power cord (K model only)		1
11	87-056-009-41		Distributors list		1
12	87-056-016-01		Tag, Main voltage (K model only)		1
13	87-056-032-01		Guarantee card (G model only)		1
14	82-916-620-01		Tape cassette, DMC-152		1
15	87-032-845-01		Siemens plug (H model only)		1
16a	87-034-880-01		AC power cord (H model only)		1
16b	87-034-883-01		AC power cord (E model only)		1
16c	87-034-871-01		AC power cord (K model only)		1
16d	87-034-879-01		AC power cord (G model only)		1

EXPLODED VIEW–1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PW6.1-12-0.5
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VWS⊕3-8
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PW3.5-8-0.25
Ⓐ
VWS⊕3-8
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PW6.1-12-0.5
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QTT2⊕3-8
VT1⊕3-18
VT1⊕3-18
VT1⊕3-18
VT1⊕3-18

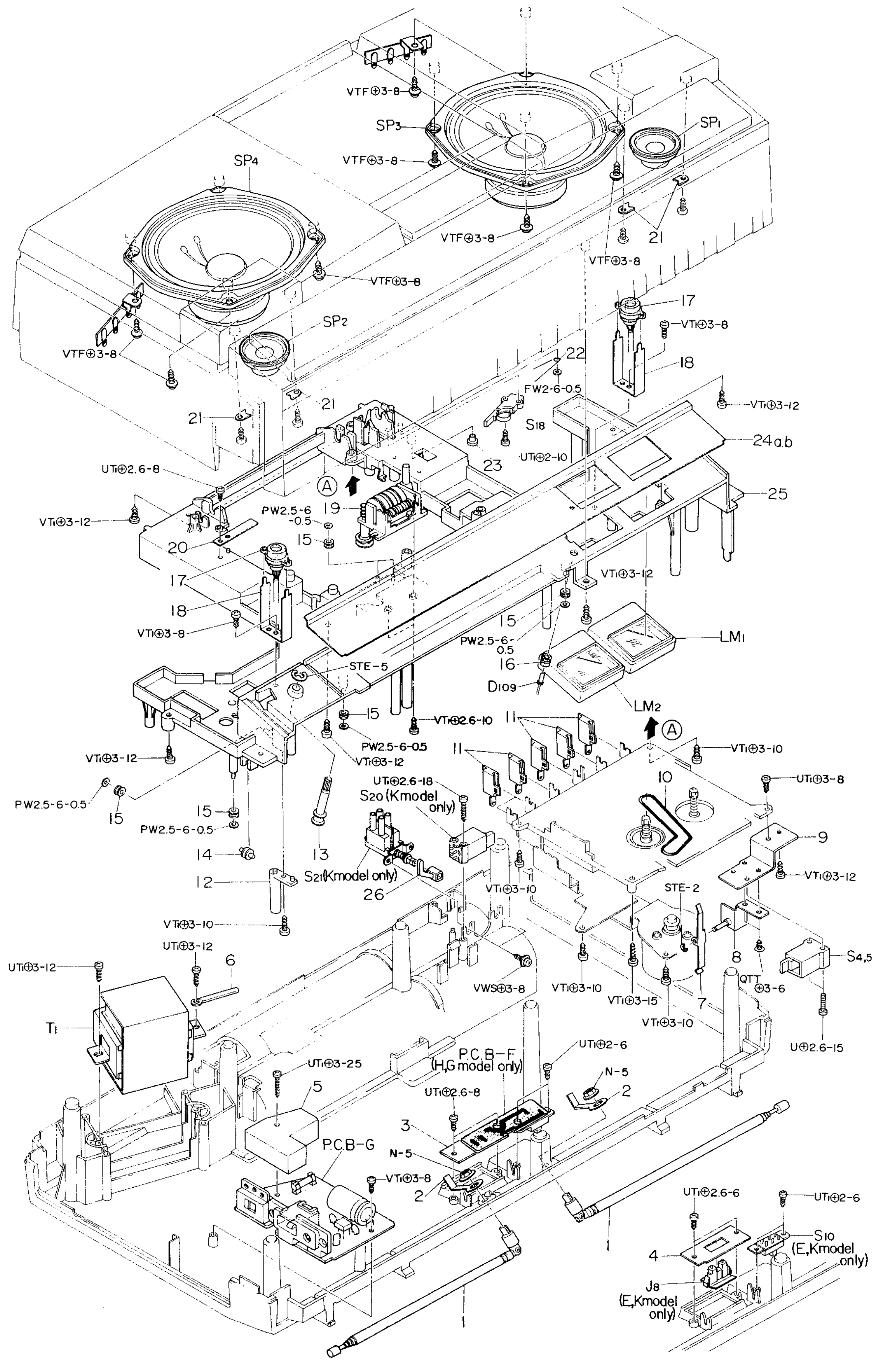
PARTS LIST

MECHANICAL PARTS

- * mark in this part list shows exclusive part (which is used) for only Model TPR-945.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1-1a	09-017-652-01		Main cabinet ass'y (H model only)	*	1
1-1b	09-017-653-01		Main cabinet ass'y (E model only)	*	1
1-1c	09-017-654-01		Main cabinet ass'y (K model only)	*	1
1-1d	09-017-655-01		Main cabinet ass'y (G model only)	*	1
	82-553-022-01		Cabinet, Main (H,G model only)	*	1
	82-553-024-01		Cabinet, Main (E model only)	*	1
	82-553-026-01		Cabinet, Main (K model only)	*	1
	82-551-054-01		Plate, AC jack (H model only)	TPR-935	1
	82-551-071-01		Plate, AC jack (E model only)	TPR-935	1
	82-551-062-01		Plate, AC jack (K,G model only)	TPR-935	1
	82-551-053-01		Blind plate, Jack (H model onlh)	TPR-935	1
	82-551-052-01		Grille, Woofer	TPR-935	2
	82-551-051-01		Ring, Woofer	TPR-935	2
	82-553-006-01		Window, ATS	*	1
	82-553-005-01		Panel, ATS	*	1
	82-534-048-01		Plate, Cassette	TPR-980	1
	82-553-020-01		Name plate, Operation	*	1
	82-551-024-01		Decorative plate	TPR-935	1
	82-553-009-01		Plate, MS	*	1
	82-553-007-01		Plate, LED	*	1
	82-551-007-01		Panel, Side (R)	TPR-935	1
	82-551-006-01		Panel, Side (L)	TPR-935	1
	82-551-004-01		Window, Dial	TPR-935	1
1-2	82-461-366-01		Felt, Carrying handle	TPR-930	1
1-3	82-461-353-01		Actuating plate, Carrying handle	TPR-930	1
1-4	82-461-303-01		Pressure plate, Carrying handle	TPR-930	1
1-5	87-073-006-01		Steel ball		1
1-6	82-461-324-01		Pressure plate spring, Carrying handle	TPR-930	1
1-7	82-551-014-01		Handle	TPR-935	2
1-8	82-551-042-01		Handle grip	TPR-935	1
1-9	09-017-656-01		Back cover ass'y	*	1
	82-551-002-01		Cabinet, Rear	TPR-935	1
	82-551-213-01		Plate, Battery	TPR-935	1
	82-551-215-01		C spring, Battery	TPR-935	1
	82-222-036-01		Spring, Battery		1
	87-038-032-01		Plate, Battery		1
1-10	82-551-003-01		Battery room lid	TPR-935	1
1-11	82-533-223-01		Cushion, Battery room lid	TPR-920	2
1-12	09-017-610-01		Cassette lid ass'y	*	1
	87-081-895-01		Decorative screw		2
	82-541-264-01		P spring R, Cassette holder	TPR-950	1
	82-541-265-01		P spring L, Cassette holder	TPR-950	1
	82-461-319-01		Cushion, Cassette lid	TPR-930	1
1-13	87-081-895-01		Special screw 3-14		2
1-14	82-538-041-01		Knob, Tuning	TPR-225	1
1-15	82-429-237-01		Knob, Spring	TPR-107	1
1-16	82-551-012-01		Knob A, Volume	TPR-935	4
1-17	82-534-043-01		Knob, Lever switch	TPR-980	4
1-18	82-534-056-01		Push-button, Timer A	TPR-980	1
1-19	82-534-067-01		Push-button, Timer C	TPR-980	1
1-20	82-553-215-01		T spring, ATS button	*	1

EXPLODED VIEW–2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SP4
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VTF⊕3-8
VTF⊕3-8
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VTi⊕3-8
VTF⊕3-8
SP2
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FW2-6-0.5
VTi⊕3-12
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S18
24a.b
UTi⊕2-10
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UTi⊕2.6-8
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VTi⊕3-12
PW2.5-6
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VTi⊕3-12
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VTi⊕3-8
PW2.5-6-
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STE-5
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LM2
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VTi⊕2.6-10
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VTi⊕3-12
PW2.5-6-0.5
VTi⊕3-10
VTi⊕3-12
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UTi⊕2.6-18
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UTi⊕3-8
S20 (K model
only)
PW2.5-6-0.5
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PW2.5-6-0.5
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S21 (K model only)
VTi⊕3-12
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VTi⊕3-10
STE-2
VTi⊕3-10
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UTi⊕3-12
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S4,5
UTi⊕3-12
VWS⊕3-8
VTi⊕3-10
VTi⊕3-15
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VTi⊕3-10
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UTi⊕2-6
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(E,K model
only)
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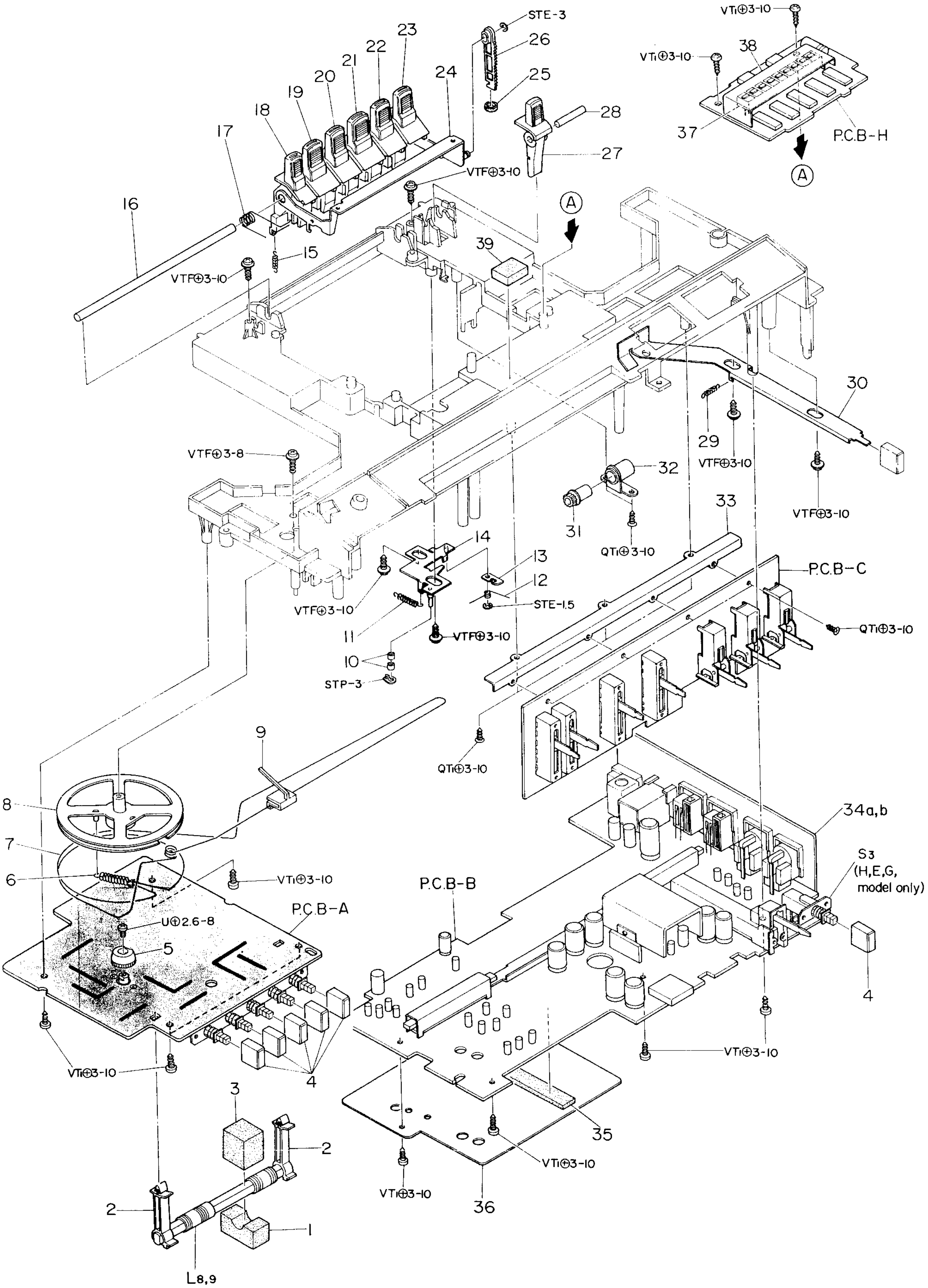
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
2-1	87-043-039-01		Whip antenna		2	
2-2	82-551-245-01		Terminal plate, Antenna	TPR-935	2	
2-3	87-033-139-01		External antenna terminal (H,G model only)		1	
2-4	82-463-088-01		Terminal plate (E,K model only)	TPR-900	1	
2-5	82-551-246-01		Cover, Fuse	TPR-935	1	
2-6	87-038-039-01		Wire binder		1	
2-7	82-551-219-01		Selector plate spring, CrO_2	TPR-935	1	
2-8	82-551-270-01		CrO_2 plate spring holder ass'y	TPR-935	1	
2-9	82-551-273-01		Holder, Power switch B	TPR-935	1	
2-10	82-445-250-01		Rubber belt, Relay	TPR-250	1	
2-11	82-541-229-01		Selector knob	TPR-950	6	
2-12	82-541-274-01		Supporter, Circuit board	TPR-950	1	
2-13	82-551-202-01		Shaft, Tuning	TPR-935	1	
2-14	82-439-317-01		Roller	TPR-300	2	
2-15	81-385-014-01		Roller		6	
2-16	82-463-216-01		Rubber bushing	TPR-900	1	
2-17	87-064-084-01		ECM holder		2	
2-18	82-551-266-01		Metal fitting, ECM	TPR-935	2	
2-19	87-040-110-01		Counter		1	
2-20	82-551-263-01		P spring, Cassette-up	TPR-935	1	
2-21	82-551-275-01		Speaker clamp ass'y	TPR-935	4	
2-22	82-553-216-01		P spring, ATS	*	1	
2-23	82-534-254-01		Lock pin, Power switch lever	TPR-980	1	
2-24a	82-553-030-01		Dial plate H (H,G model only)	*	1	
2-24b	82-553-031-01		Dial plate E (E,K model only)	*	1	
2-25	82-551-267-01		Radio chassis, EX	TPR-935	1	
2-26	82-539-213-01		Power switch sub lever (K model only)	TPR-905	1	

EXPLODED VIEW–3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(H,E,G,
model only)
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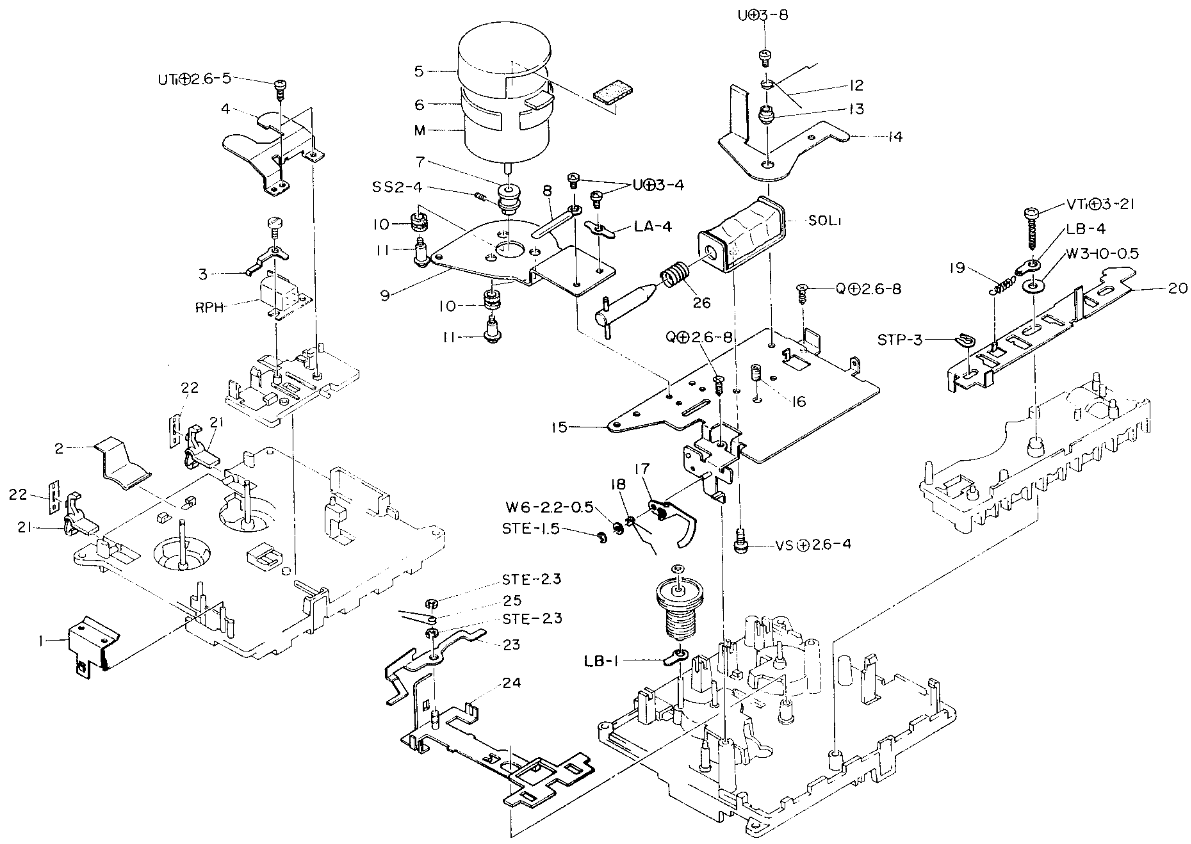
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-551-265-01		Cushion, Bar antenna	TPR-935	1
3-2	82-532-209-01		Holder, Bar antenna		2
3-3	82-536-215-01		S cushin	TPR-620	1
3-4	82-551-016-01		Push button, BAND	TPR-935	6
3-5	82-439-331-01		Joint, Drum	TPR-300	1
3-6	82-541-291-01		E spring, Dial	TPR-950	1
3-7	87-096-045-01		Dial string		1
3-8	82-439-310-01		Drum	TPR-300	1
3-9	82-553-012-01		Pointer, Tuning	*	1
3-10	87-085-135-01		Bushing 3-4-5		2
3-11	82-553-214-01		E spring, ATS	*	1
3-12	82-541-250-01		T spring, Sleep switch	TPR-950	1
3-13	82-530-223-01		Lock plate	TPR-216	1
3-14	82-553-205-01		Slide plate ATS ass'y	*	1
3-15	82-541-288-01		E spring, Push-key	TPR-950	1
3-16	82-551-203-01		Shaft, Push button	TPR-935	1
3-17	82-551-223-01		T spring, Cassette box	TPR-935	1
3-18	82-553-019-01		Push-key, PAUSE	*	1
3-19	82-553-018-01		Push-key, STOP	*	1
3-20	82-553-017-01		Push-key, FF	*	1
3-21	82-553-016-01		Push-key, PLAY	TPR-945	1
3-22	82-553-015-01		Push-key, REW	TPR-945	1
3-23	82-553-014-01		Push-key, REC	TPR-945	1
3-24	82-551-241-01		Lever ass'y	TPR-935	1
3-25	82-461-319-01		Cushion, Cassette lid	TPR-930	1
3-26	82-541-240-01		Oil damper lever	TPR-950	1
3-27	82-541-026-01		Push-key, stand-by	TPR-950	1
3-28	82-541-231-01		Shaft, Stand-by	TPR-950	1
3-29	82-283-289-01		Spring, Play idler lever (K model only)	TP-770	1
3-30	82-551-268-01		Power switch lever (K model only)	TPR-935	1
3-31	82-534-264-01		Gear, Oil damper	TPR-980	1
3-32	82-534-250-01		Metal fitting ass'y, Oil damper	TPR-980	1
3-33	82-551-221-01		Holder, Volume circuit board	TPR-935	1
3-34a	82-551-685-01		Jack plate H ass'y (H,G model only)	*	1
3-34b	82-551-057-01		Jack plate K (E,K model only)	*	1
3-35	82-416-260-01		M cushion	TPR-601	1
3-36	82-551-662-01		Shield plate	TPR-935	1
3-37	82-553-203-01		Guide, LED	*	1
3-38	82-553-007-01		Plate, LED	*	1
3-39	82-272-387-01		Cushion, Circuit board		1

EXPLODED VIEW–4

As this is a PM-1 mechanism, the exploded view is omitted (see the supplement PM-1 mechanism adjustment manual). The exploded view bellow shows the additional mechanism of the PM-1. Also shown are the attachments of the motor and a list of such.


U⊕3-8
UTi⊕2.6-5
4
5
6
M
7
SS2-4
8
U⊕3-4
LA-4
10
11
9
10
11
SOLI
12
13
14
VTi⊕3-21
LB-4
W3-10-0.5
19
20
Q⊕2.6-8
26
STP-3
3
RPH
Q⊕2.6-8
16
15
22
21
2
22
21
17
18
W6-2.2-0.5
STE-1.5
VS⊕2.6-4
STE-2.3
25
STE-2.3
23
24
LB-1
1

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
4-1	82-541-284-01		Pressure plate spring, Wire	TPR-950	1	
4-2	82-534-297-01		Pressure plate spring, Cassette	TPR-980	1	
4-3	82-539-206-01		Earth plate, Erase head	TPR-905	1	
4-4	82-541-628-01		Shield plate, Head	TPR-950	1	
4-5	82-541-612-01		Motor shield cap	TPR-950	1	
4-6	82-551-617-01		Motor shield plate A	TPR-935	1	
4-7	87-071-025-01		Motor pulley		1	
4-8	87-038-039-01		Wire binder		1	
4-9	82-551-261-01		Holder, Motor	TPR-935	1	
4-10	87-087-019-01		Rubber cushion		3	
4-11	87-081-483-01		Motor screw, M2.6		3	
4-12	82-534-271-01		T spring, REC lever	TPR-980	1	
4-13	82-534-212-01		Collar, REC lever	TPR-980	1	
4-14	82-551-208-01		Lever, REC	TPR-935	1	
4-15	82-551-242-01		Flywheel bearing plate ass'y	TPR-935	1	
4-16	82-385-311-01		Thrust screw	AD-6300	1	
4-17	82-534-275-01		Lock plate, Stand-by	TPR-980	1	
4-18	82-534-270-01		T spring, PAUSE	TPR-980	1	
4-19	82-283-289-01		Spring, Play idler lever	TP-770	1	
4-20	82-551-264-01		Plate, Auto-replay	TPR-935	1	
4-21	82-439-261-01		REC blocking lever	TPR-300	2	
4-22	82-560-235-01		Plate spring, REC blocking lever		2	
4-23	82-439-271-01		CrO_2 selector lever	TPR-300	1	
4-24	82-494-314-01		Brake plate ass'y	AF-5600	1	
4-25	82-534-266-01		T spring, CrO_2 selector lever	TPR-980	1	
4-26	82-553-209-01		P spring, plunger	*	1	

The following is the part number list of the ☆☆☆☆☆ marked parts of the PM-1 mechanism.

Ref. No.	Part No.	Description	Q'ty	
1-13	82-385-332-11	Spring B, Head adjusting	1	
1-14	87-046-159-01	Rec./Pb head	1	
1-25	82-540-315-01	Slide lever, Cassette up	1	
1-31	87-046-127-01	Erase head	1	
2-31	87-253-092-11	Mounting screw, REC plate spring	1	

Ref. No.	Part No.	Description	Q'ty	
2-32	82-534-298-01	Plate spring, REC	1	
2-33	82-439-228-31	Lever, REC	1	
2-49	82-541-278-01	Belt, Main	1	
2-50	82-439-489-01	Flywheel ass'y	1	
2-51	82-385-314-21	Rubber belt	1	
2-60	82-385-309-21	Worm gear B ass'y	1	

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1	82-553-853-01		Printed indiv., Packing	*	1	
2	82-551-857-01		Cushion L, Printed indiv.	TPR-935	1	
3	82-551-858-01		Cishion R, Printed indiv.	TPR-935	1	
4	87-051-137-11		Poly-vinyl sack (for AC power cord) (H,E,K model only)		1	
5	87-056-535-01		Air-cap sack (G model only)		1	
6	87-056-607-01		Poly-vinyl sack (for case)		1	
7a	82-553-904-01		Instructions booklet (H model only)	*	1	
7b	82-553-907-01		Instructions booklet (E model only)	*	1	
7c	82-553-909-01		Instructions booklet (K model only)	*	1	
7d	82-553-910-01		Instructions booklet (G model only)	*	1	
8	82-553-905-01		Label, POP	*	1	
9	87-051-171-11		Poly-vinyl sack (for instruction)		1	
10	87-056-008-11		Label, AC power cord (K model only)		1	
11	87-056-009-41		Distributors list		1	
12	87-056-016-01		Tag, Main voltage (K model only)		1	
13	87-056-032-01		Guarantee card (G model only)		1	
14	82-916-620-01		Tape cassette, DMC-152		1	
15	87-032-845-01		Siemens plug (H model only)		1	
16a	87-034-880-01		AC power cord (H model only)		1	
16b	87-034-883-01		AC power cord (E model only)		1	
16c	87-034-871-01		AC power cord (K model only)		1	
16d	87-034-879-01		AC power cord (G model only)		1	

790825(1)–Z

AIWA CO., LTD.

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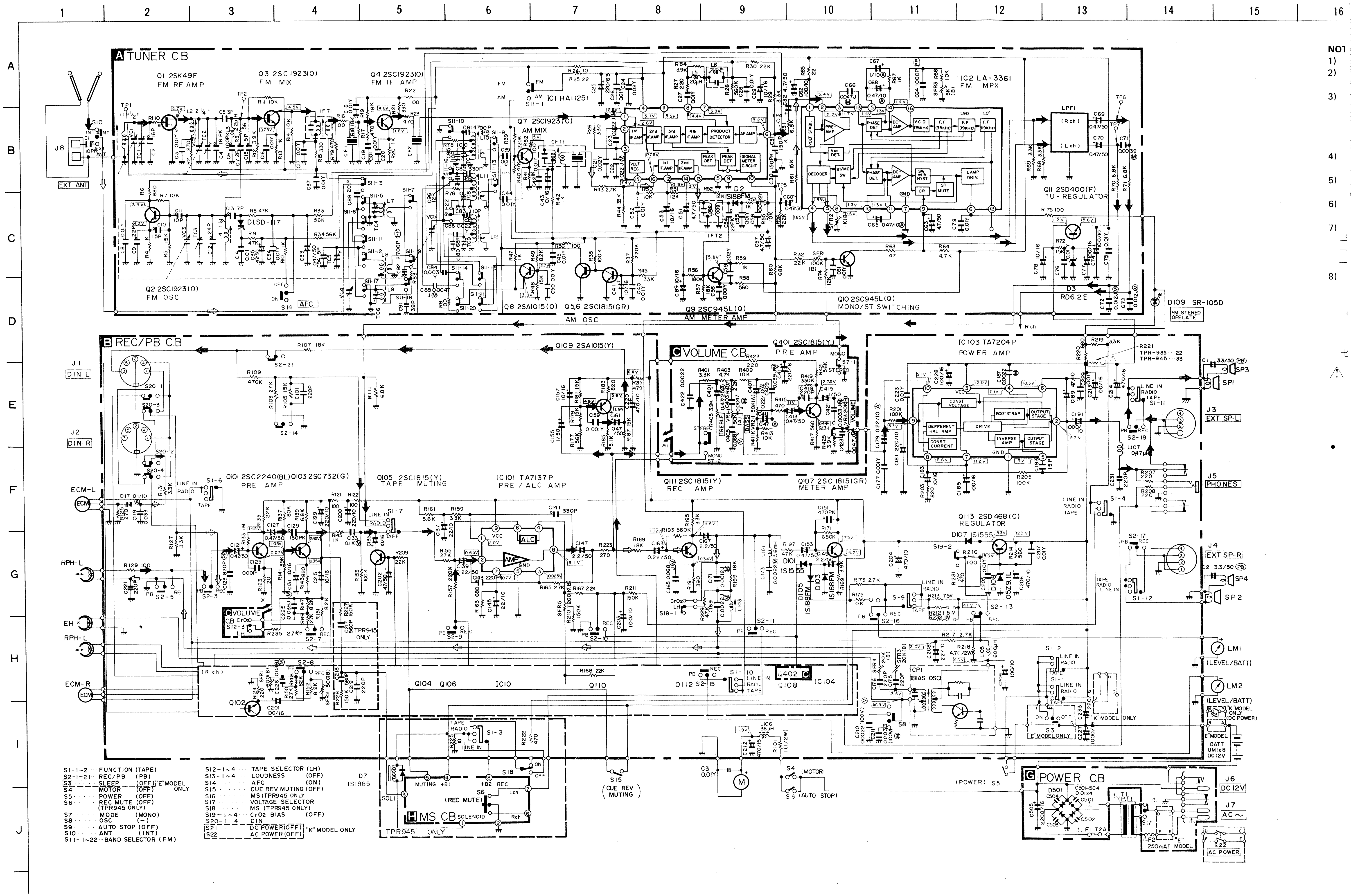
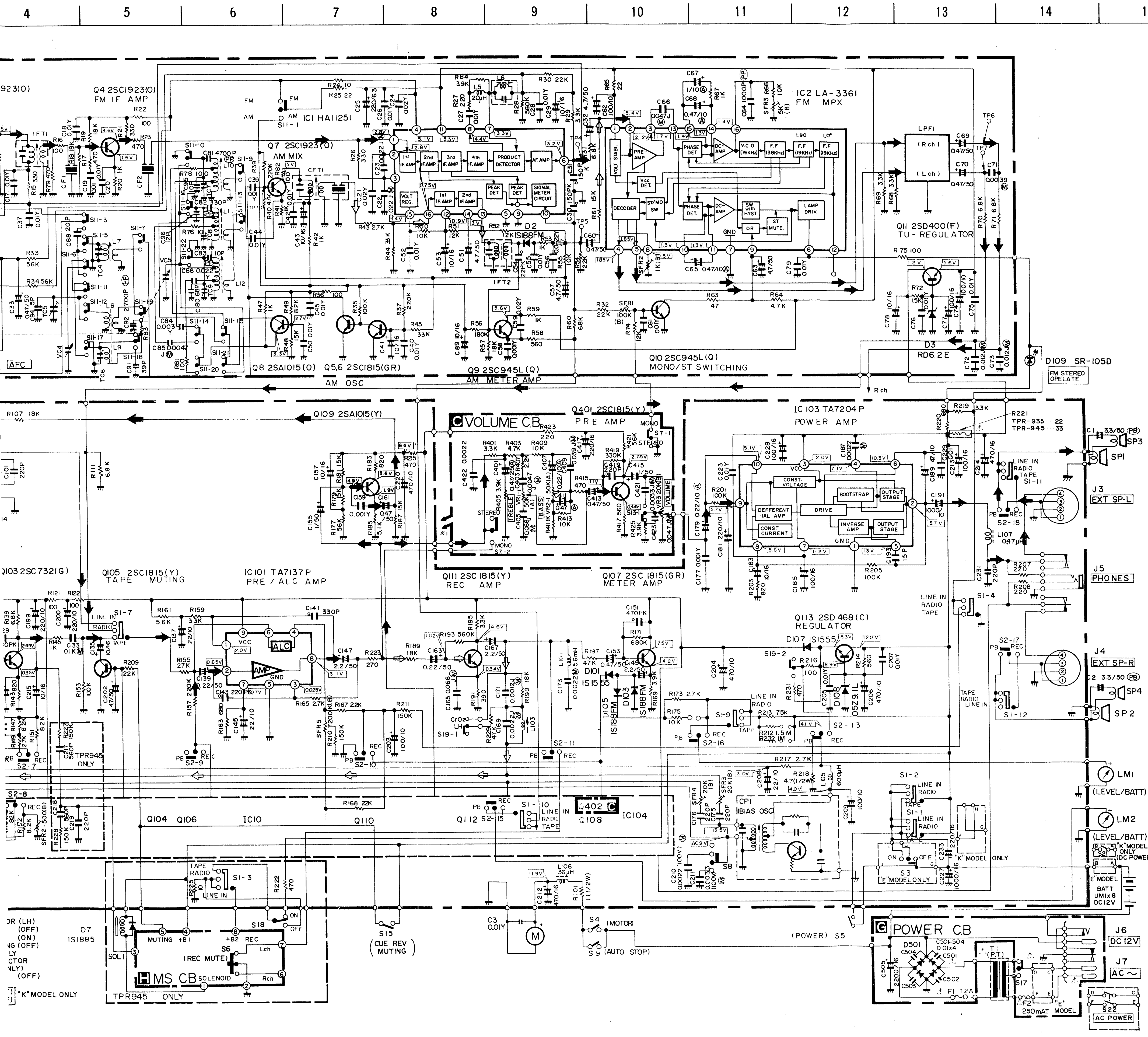
SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
A TUNER C.B
Q1 2SK49F FM RF AMP
Q3 2SC1923(O) FM MIX
Q4 2SC1923(O) FM IF AMP
Q2 2SC1923(O) FM OSC
D1 SD-117
Q7 2SC1923(O) AM MIX
IC1 HA11251
IC2 LA-3361 FM MPX
Q11 2SD400(F) TU-REGULATOR
D3 RD6.2E
Q8 2SA1015(O)
Q5,6 2SC1815(GR) AM OSC
Q9 2SC945L(Q) AM METER AMP
Q10 2SC945L(Q) MONO/ST SWITCHING
D109 SR-105D FM STEREO OPELATE
LPF1
J8
EXT ANT
S10 INT ANT EXT ANT
S14 AFC
B REC/PB CB
Q109 2SA1015(Y)
C VOLUME CB
Q401 2SC1815(Y) PRE AMP
IC103 TA7204P POWER AMP
R221 TPR-935 22 TPR-945 33
J1 DIN-L
J2 DIN-R
ECM-L
ECM-R
RPH-L
EH
Q101 2SC2240(BL) Q103 2SC732(G) PRE AMP
Q105 2SC1815(Y) TAPE MUTING
IC101 TA7137P PRE / ALC AMP
Q111 2SC1815(Y) REC AMP
Q107 2SC1815(GR) METER AMP
Q113 2SD468(C) REGULATOR
D107 1S1555
Q102
Q104 Q106 IC10
Q110
Q112
Q402 C Q108 IC104
TPR945 ONLY
CP1 (BIAS OSC)
J3 EXT SP-L
J4 EXT SP-R
J5 PHONES
SP1 SP2 SP3 SP4
LM1 (LEVEL/BATT)
LM2 (LEVEL/BATT)
H MS CB
TPR945 ONLY
SOL1
MUTING +B1
+B2 REC
(REC MUTE)
SOLENOID
S15 (CUE REV MUTING)
S4 (MOTOR)
S9 (AUTO STOP)
(POWER) S5
G POWER CB
D501
C501-504 0.01x4
T1 (P.T.)
F1 T2A
F2 250mAT "E" MODEL
J6 DC 12V
J7 AC~
S22 AC POWER
S21 "K" MODEL ONLY (DC POWER)
"E" MODEL BATT UM1x8 DC12V
S3 "E" MODEL ONLY
"K" MODEL ONLY
S17
D7 1S1885
Rch
Lch

S1-1~2 ··· FUNCTION (TAPE)
S2-1~21 ··· REC/PB (PB)
S3 ······ SLEEP (OFF) "E"MODEL ONLY
S4 ······ MOTOR (OFF)
S5 ······ POWER (OFF)
S6 ······ REC MUTE (OFF) (TPR945 ONLY)
S7 ······ MODE (MONO)
S8 ······ OSC (−)
S9 ······ AUTO STOP (OFF)
S10 ····· ANT (INT)
S11-1~22 ··· BAND SELECTOR (FM)

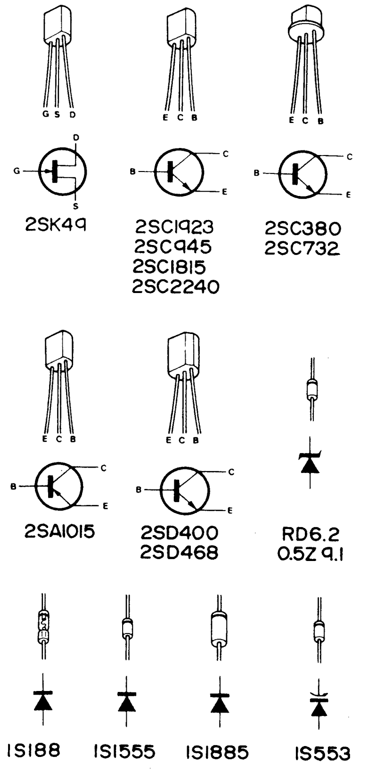
S12-1~4 ··· TAPE SELECTOR (LH)
S13-1~4 ··· LOUDNESS (OFF)
S14 ······ AFC (ON)
S15 ······ CUE REV MUTING (OFF)
S16 ······ MS (TPR945 ONLY
S17 ······ VOLTAGE SELECTOR
S18 ······ MS (TPR945 ONLY)
S19-1~4 ··· CrO2 BIAS (OFF)
S20-1 4 ··· DIN
S21 ······ DC POWER (OFF) "K" MODEL ONLY
S22 ······ AC POWER (OFF)

NO
1)
2)
3)
4)
5)
6)
7)
8)

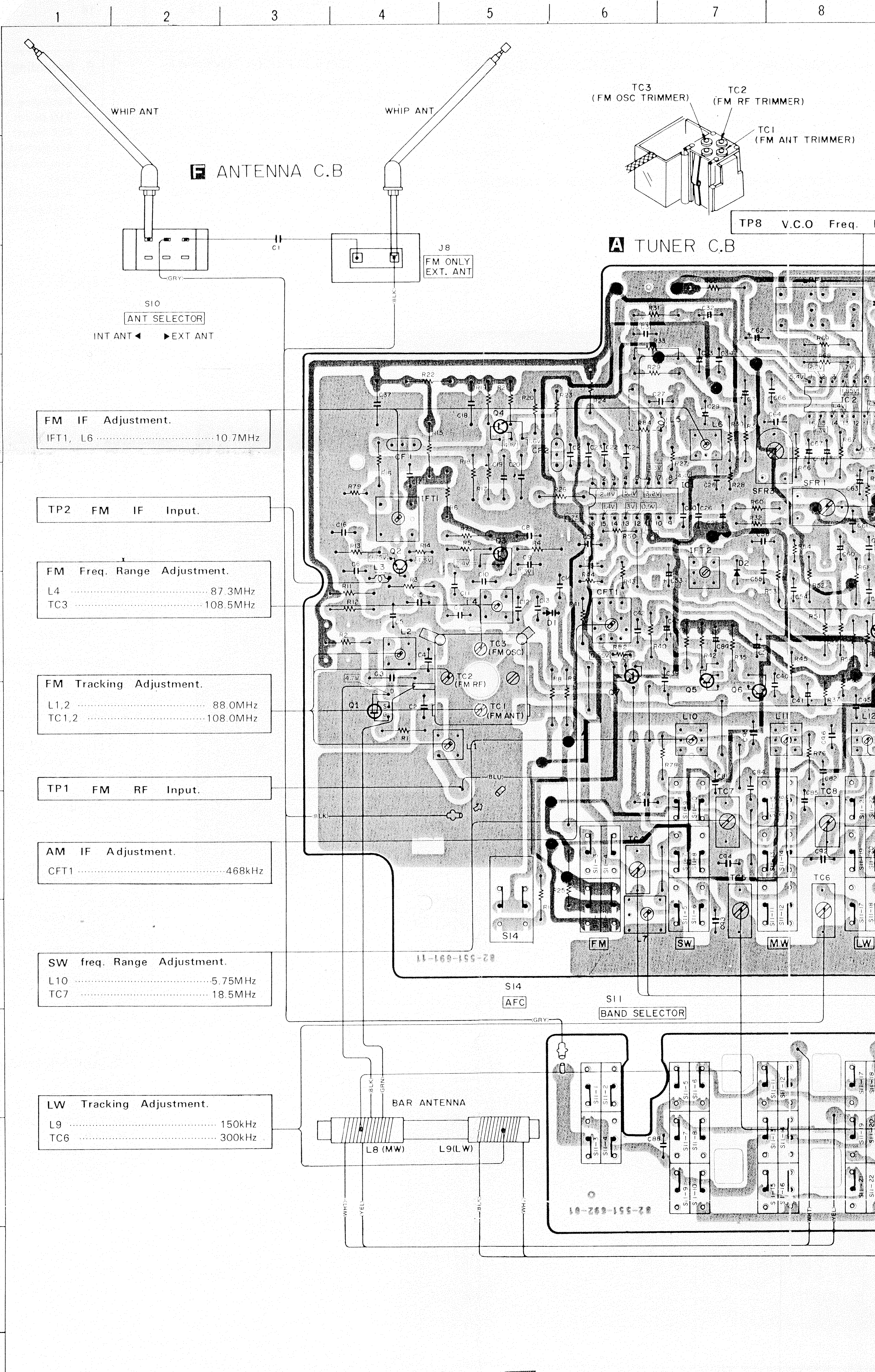

4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Q4 2SC1923(O)
FM IF AMP
IC1 HA11251
Q7 2SC1923(O)
AM MIX
IC2 LA-3361
FM MPX
LPF1
Q11 2SD400(F)
TU-REGULATOR
D3
RD6.2E
D109 SR-105D
FM STEREO OPELATE
Q8 2SA1015(O)
Q5,6 2SC1815(GR)
Q9 2SC945L(Q)
AM METER AMP
Q10 2SC945L(Q)
MONO/ST SWITCHING
AM OSC
AFC
Q109 2SA1015(Y)
C VOLUME C.B.
Q401 2SC1815(Y)
PRE AMP
IC 103 TA7204P
POWER AMP
Q111 2SC1815(Y)
REC AMP
Q107 2SC 1815(GR)
METER AMP
Q103 2SC732(G)
Q105 2SC1815(Y)
TAPE MUTING
IC101 TA7137P
PRE / ALC AMP
Q113 2SD 468(C)
REGULATOR
R221
TPR-935 ··· 22
TPR-945 ··· 33
SP3
SP1
J3
EXT SP-L
J5
PHONES
J4
EXT SP-R
SP4
SP2
LM1
(LEVEL/BATT)
LM2
(LEVEL/BATT)
"K" MODEL ONLY (DC POWER)
"E" MODEL
BATT UM1x8 DC12V
J6
DC 12V
J7
AC ~
S22
AC POWER
Q104 Q106 IC10
Q110
Q112
Q402
Q108
IC104
CP1 BIAS OSC
S3 "E"MODEL ONLY
"K"MODEL ONLY
G POWER C.B
D501
T1 (P.T)
F1 T2A
F2 250mAT
"E" MODEL
S17
(POWER) S5
S4 (MOTOR)
S (AUTO STOP)
S15
(CUE REV MUTING)
H MS C.B
TPR945 ONLY
S18
S6
(REC MUTE)
SOLENOID
MUTING +B1
+B2 REC
D7 1S1885
SOL1
"K"MODEL ONLY
TPR945 ONLY

NOTES:

1) —— B (+) power supply
2) ➡ Signal path
⇨ Rec path, AM signal path.
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.
But (   ) is with AM reception or recording.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
4) Resistors with no designation have a rated power of ¼W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectric strength of less than 50WV.
6) The only capacitor tolerances indicated are ±5% (J) and ±10% (K).
7) Ceramic capacitor symbols:
For temperature compensation (SL)
High dielectric constant system (YY)
High dielectric constant system (YW, YP, YZ)
8) Explanation of symbols
Ⓜ Mylar capacitor
Ⓐ Aluminum solid capacitor
(PP) Polypropylene film capacitor
(BP) Bi-polarized capacitor
Ⓣ Tantalum capacitor
Fuse resistor
Safety component symbol
⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.
- This schematic diagram is subject to change without notice in the interests of improved performance.


G S D
E C B
E C B
2SK49
2SC1923
2SC945
2SC1815
2SC2240
2SC380
2SC732
E C B
E C B
2SA1015
2SD400
2SD468
RD6.2
0.5Z9.1
1S188
1S1555
1S1885
1S553

WIRING–1


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
WHIP ANT
WHIP ANT
F ANTENNA C.B
C1
J8
FM ONLY
EXT. ANT
GRY
BLK
S10
ANT SELECTOR
INT ANT◀ ▶EXT ANT
TC3
(FM OSC TRIMMER)
TC2
(FM RF TRIMMER)
TC1
(FM ANT TRIMMER)
TP8 V.C.O Freq.
A TUNER C.B
Q1
Q2
Q4
Q5
Q6
CF1
IFT1
IFT2
CFT1
TC3 (FM OSC)
TC2 (FM RF)
TC1 (FM ANT)
L10
L11
TC7
TC8
TC6
SFR1
BLU
BLK
S14
FM
SW
MW
LW
82-551-691-11
S14
AFC
S11
BAND SELECTOR
GRY
BLK
GRN
BAR ANTENNA
L8 (MW)
L9(LW)
WHT
YEL
BLK
WHT
82-551-692-01

FM IF Adjustment.
IFT1, L6 .... 10.7MHz

TP2 FM IF Input.

FM Freq. Range Adjustment.
L4 .... 87.3MHz
TC3 .... 108.5MHz

FM Tracking Adjustment.
L1,2 .... 88.0MHz
TC1,2 .... 108.0MHz

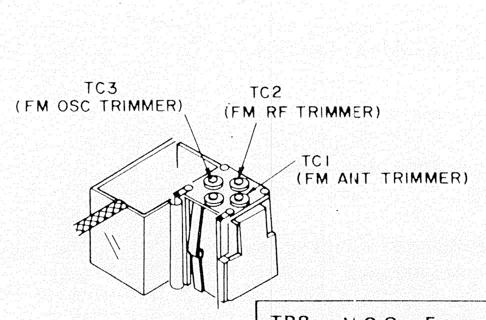
TP1 FM RF Input.

AM IF Adjustment.
CFT1 .... 468kHz

SW freq. Range Adjustment.
L10 .... 5.75MHz
TC7 .... 18.5MHz

LW Tracking Adjustment.
L9 .... 150kHz
TC6 .... 300kHz

NOTES (1) ■ B(+) Pattern ▨ Component side pattern ▨ Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) wh
But ( ) is with AM reception.


TC3
(FM OSC TRIMMER)
TC2
(FM RF TRIMMER)
TC1
(FM ANT TRIMMER)

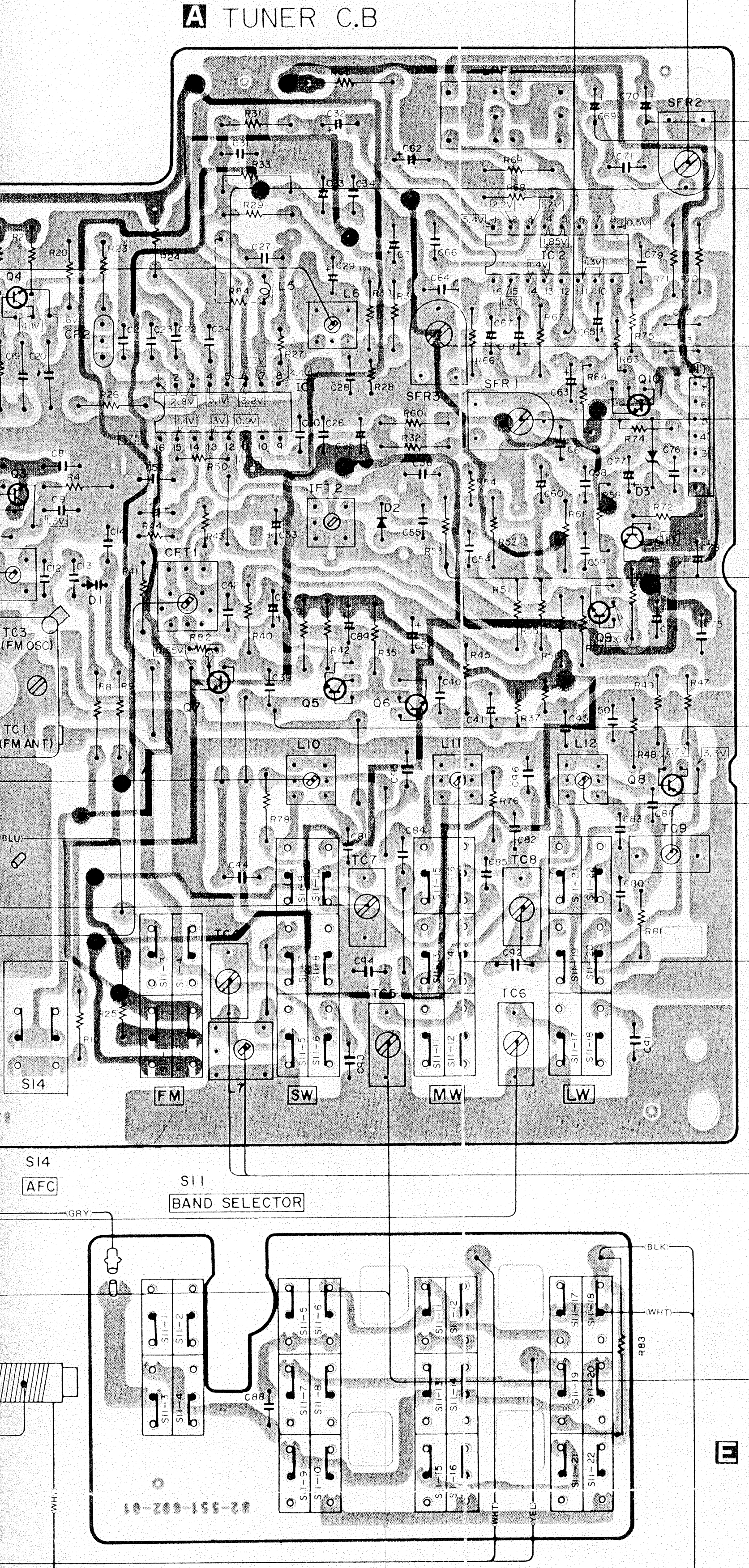
TP8 V.C.O Freq. Monitor.

FM Separation Adjustment.

Setting:
- ● Carrier frequency 98MHz
- ● Input signal 54dB

Method:
Adjust SFR2 so that the sparation is bese value.

Rated:
22±3dB(at 1kHz)


A TUNER C.B
SFR1
SFR2
SFR3
IC1
IC2
CFT1
IFT2
L7
L10
L11
L12
TC3 (FM OSC)
TC1 (FM ANT)
TC4
TC5
TC6
TC7
TC8
TC9
Q5
Q6
Q8
Q10
D1
D2
D3
S14
FM
SW
MW
LW
S14
AFC
S11
BAND SELECTOR
GRY
BLU
BLK
WHT
YEL
WH
R83
C88
82-551-692-01
E SWITCH C.B

TP7 Tuner Output (L-ch).

TP6 Tuner Output (R-ch).

TP4 FM DET Output.

VCO Freq. Adjustment.

SFR3 .... 19kHz±20Hz

Stereo Indicator Adjustment.

Setting:
- ● Carrier frequency 98MHz
- ● Input signal 15dB

Method:
Adjust SFR1 so that the stereo indicator light up.

Rated:
15±3dB

TP5 AM DET Output.

TP3 AM IF Input.

LW Freq. Range Adjustment.

L12 .... 145kHz
TC9 .... 320kHz

MW Freq. Range Adjustment.

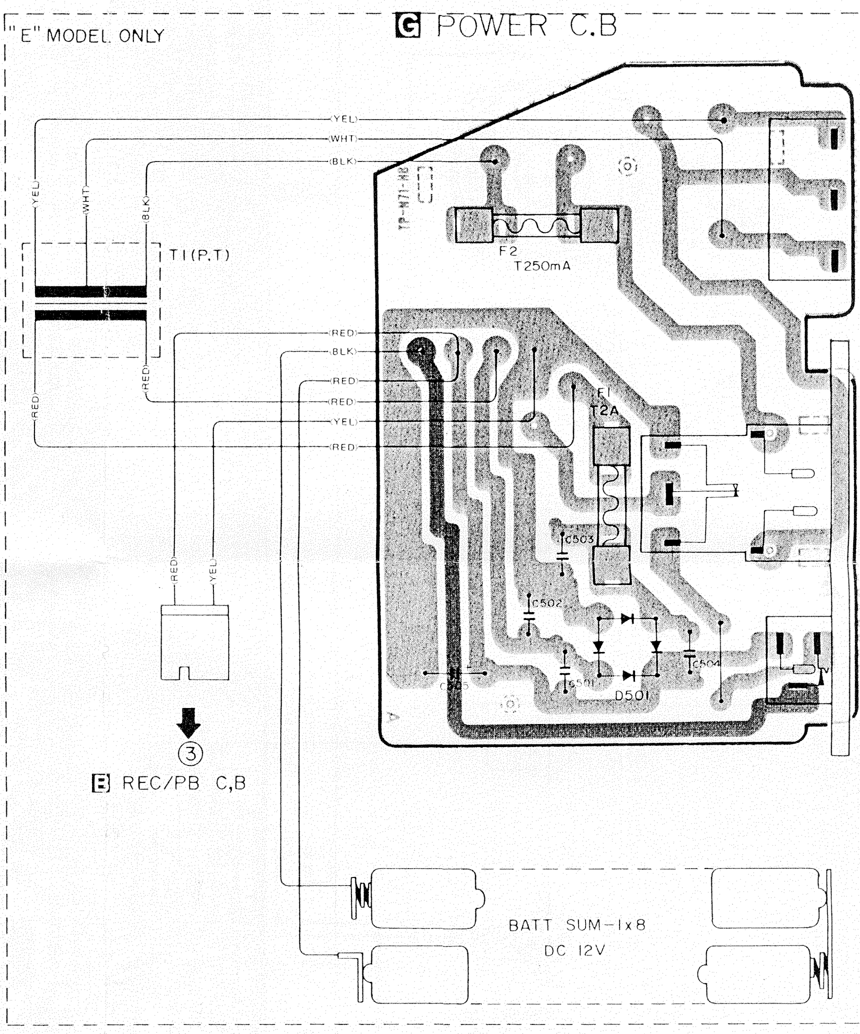
L11 .... 515kHz
TC8 .... 1650kHz

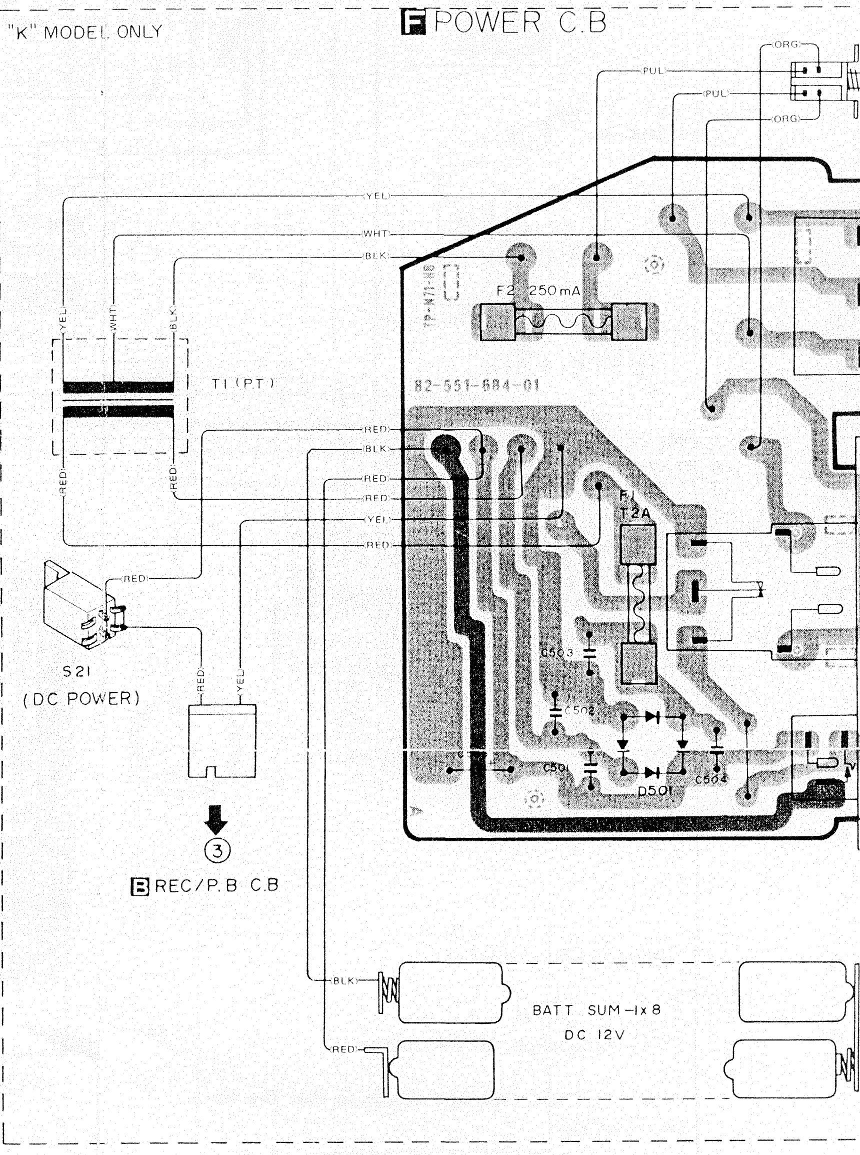
SW Tracking Adjustment.

L7 .... 5.9MHz
TC4 .... 18.0MHz

MW Trscking Adjustment.

L8 .... 600kHz
TC5 .... 1400kHz

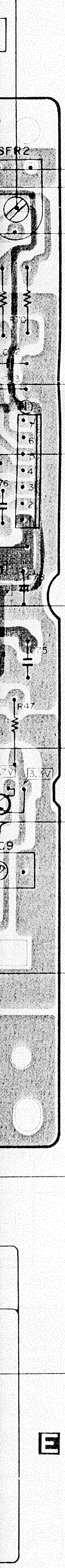

"E" MODEL ONLY
G POWER C.B
YEL
WHT
BLK
RED
T1(P.T)
TP-N71-H8
F2
T250mA
F1
T2A
C502
C503
C504
D501
B REC/PB C,B
③
BATT SUM-1x8
DC 12V


"K" MODEL ONLY
F POWER C.B
ORG
PUL
YEL
WHT
BLK
RED
T1(P.T)
TP-N71-H8
F2 250mA
82-551-684-01
F1
T2A
C501
C502
C503
C504
D501
S21
(DC POWER)
B REC/P.B C.B
③
BATT SUM-1x8
DC 12V

rn ▨ Component side pattern ▨ Others pattern

he reference value measured with a tester (20 K ohms/V DC) when there are no signals.

with AM reception.



FM Separation Adjustment.

Setting:
- Carrier frequency 98MHz
- Input signal 54dB

Method:
Adjust SFR2 so that the sparation is bese value.

Rated:
22±3dB(at 1kHz)

TP7 Tuner Output (L-ch).

TP6 Tuner Output (R-ch).

TP4 FM DET Output.

VCO Freq. Adjustment.

SFR3 ……………… 19kHz±20Hz

Stereo Indicator Adjustment.

Setting:
- Carrier frequency 98MHz
- Input signal 15dB

Method:
Adjust SFR1 so that the stereo indicator light up.

Rated:
15±3dB

TP5 AM DET Output.

TP3 AM IF Input.

LW Freq. Range Adjustment.

L12	145kHz
TC9	320kHz

MW Freq. Range Adjustment.

L11	515kHz
TC8	1650kHz

SW Tracking Adjustment.

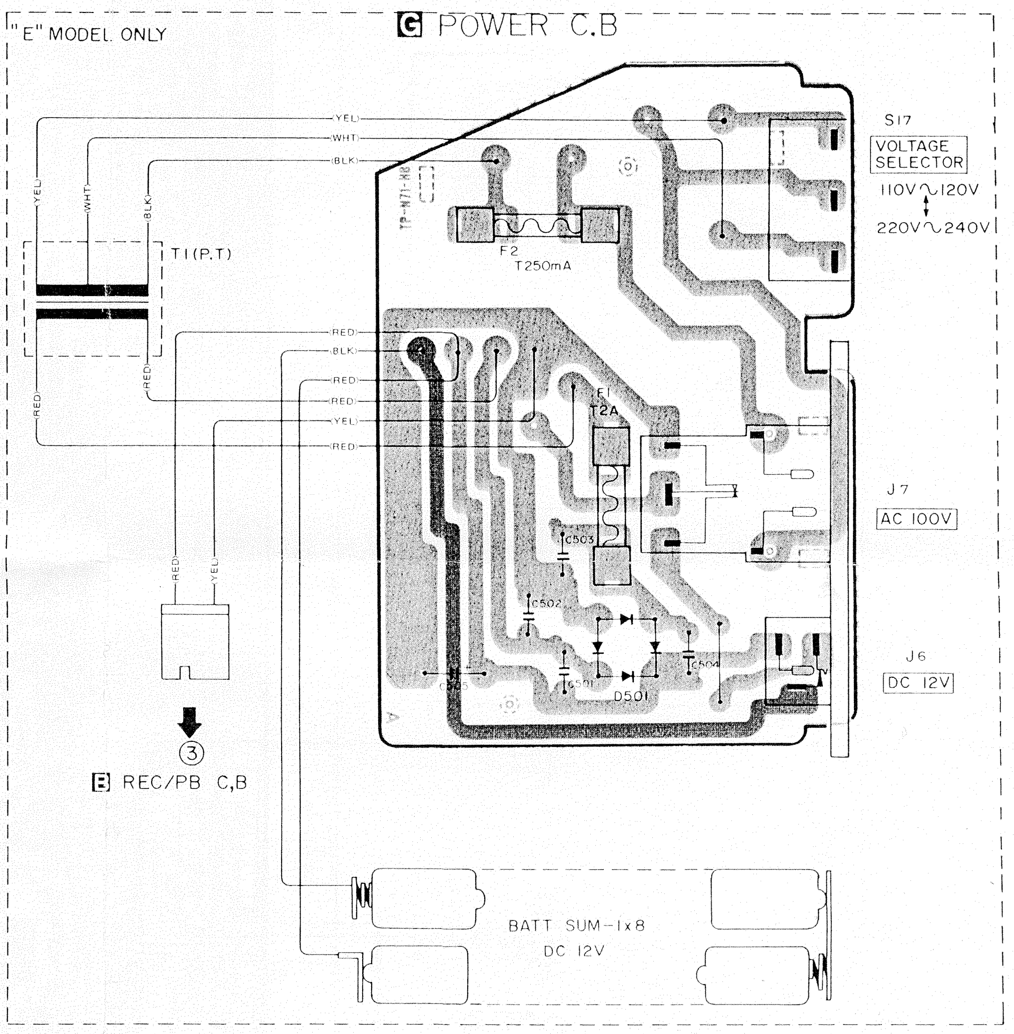
L7	5.9MHz
TC4	18.0MHz

MW Trscking Adjustment.

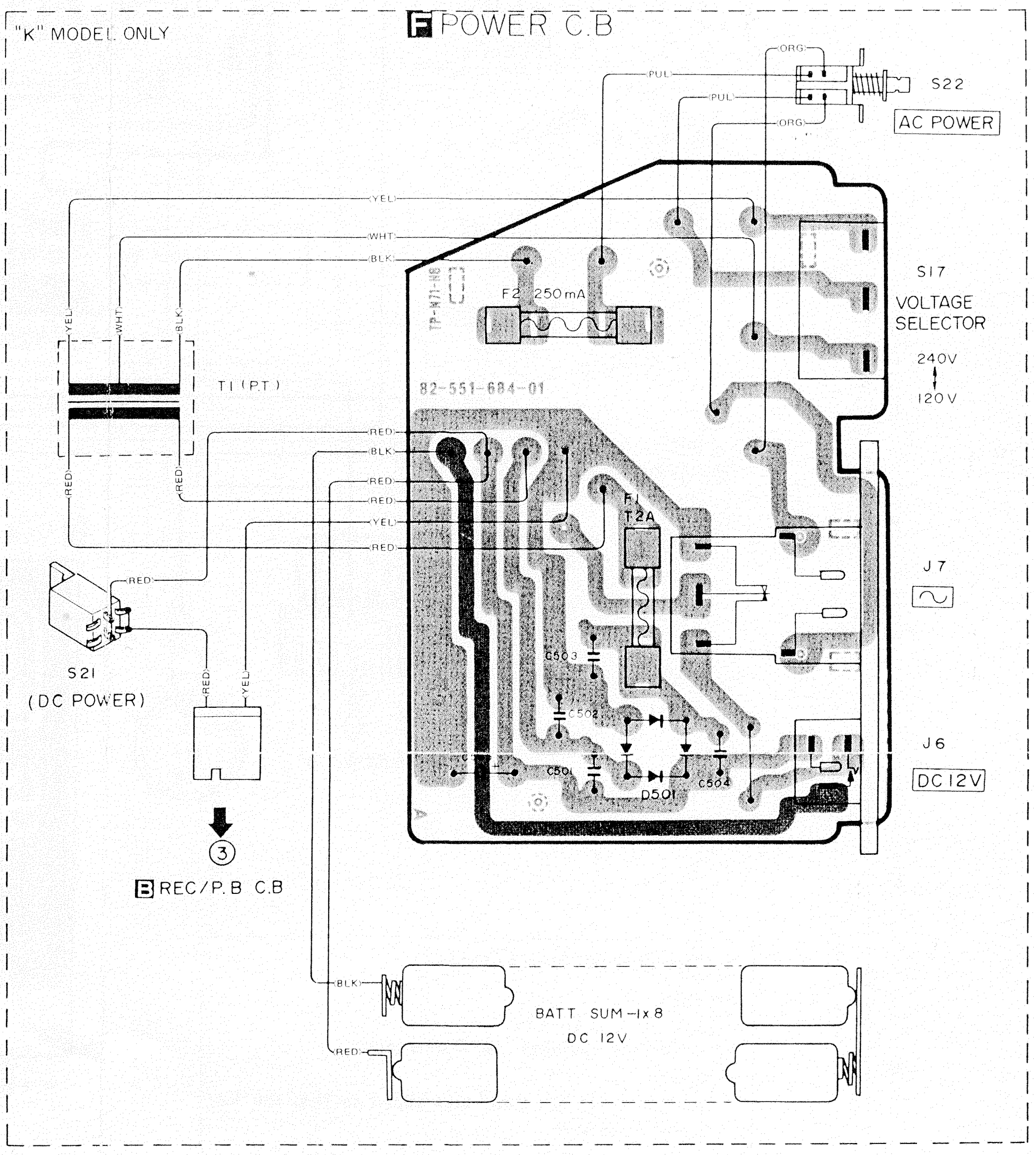
L8	600kHz
TC5	1400kHz

E SWITCH C.B

e are no signals.

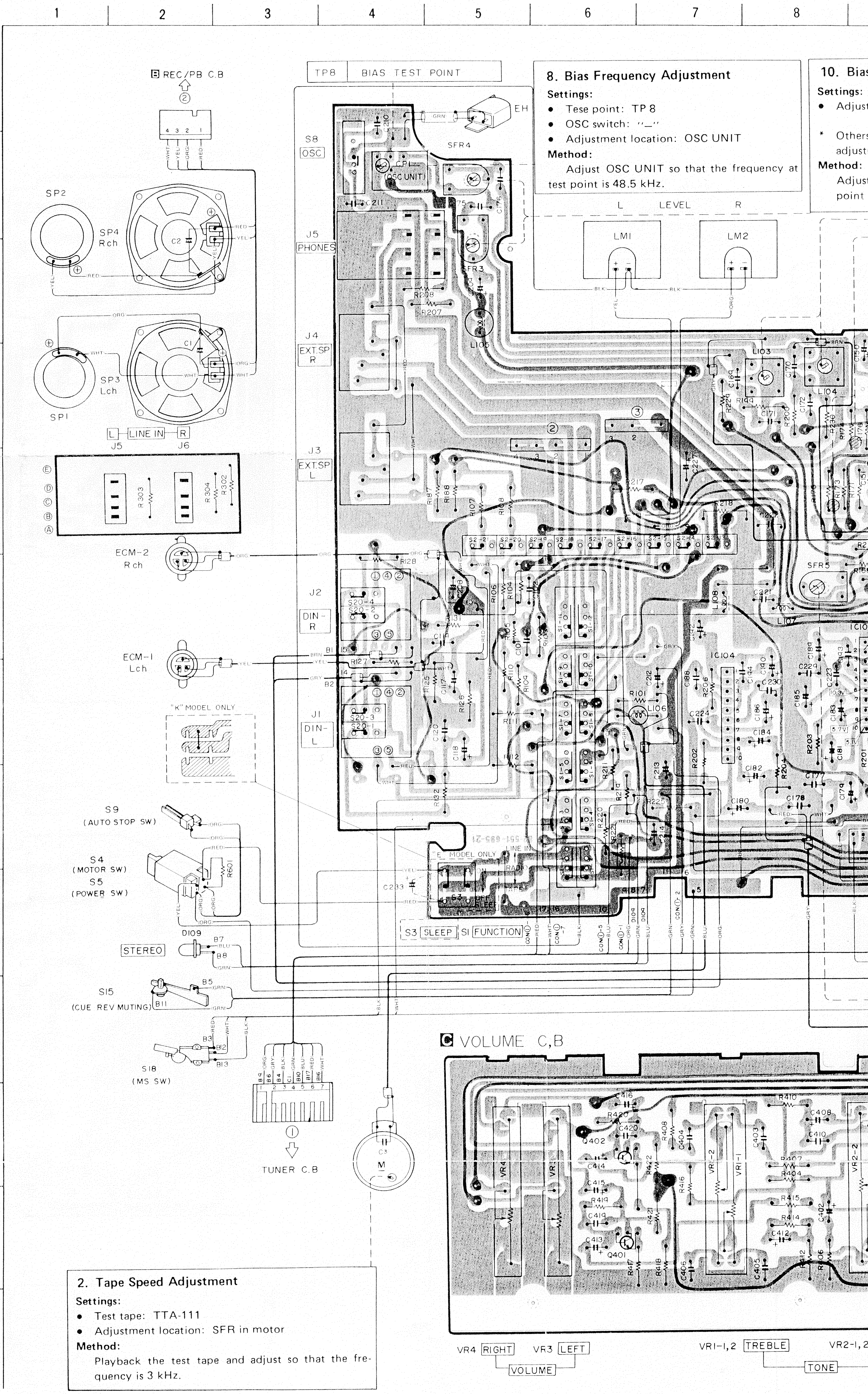

"E" MODEL ONLY

G POWER C.B
YEL
WHT
BLK
RED
T1(P.T)
F2
T250mA
F1
T2A
C503
C502
C501
C504
D501
S17
VOLTAGE SELECTOR
110V∿120V
220V∿240V
J7
AC 100V
J6
DC 12V
TP-W71-H8
③
B REC/PB C,B
BATT SUM-1x8
DC 12V


"K" MODEL ONLY

F POWER C.B
ORG
PUL
S22
AC POWER
YEL
WHT
BLK
RED
T1(P.T)
F2 250mA
82-551-684-01
TP-W71-H8
F1
T2A
C503
C502
C501
C504
D501
S17
VOLTAGE SELECTOR
240V
120V
J7
∿
J6
DC 12V
S21
(DC POWER)
③
B REC/P.B C.B
BATT SUM-1x8
DC 12V

WIRING-2


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
TP8
BIAS TEST POINT
B REC/PB C.B
②
SP2
SP4
Rch
SP3
Lch
SP1
C1
C2
L LINE IN R
J5 J6
R303
R304
R302
ECM-2
R ch
ECM-1
Lch
"K" MODEL ONLY
S9
(AUTO STOP SW)
S4
(MOTOR SW)
S5
(POWER SW)
R601
D109
STEREO
S15
(CUE REV MUTING)
S18
(MS SW)
TUNER C.B
M
S8
OSC
J5
PHONES
J4
EXT.SP
R
J3
EXT.SP
L
J2
DIN-
R
J1
DIN-
L
EH
SFR4
SFR3
SFR5
OSC UNIT
L105
L103
L104
L106
L107
L108
IC104
"E" MODEL ONLY
LINE IN
S3 SLEEP
S1 FUNCTION
C233
L LEVEL R
LM1
LM2
C VOLUME C,B
Q401
Q402
VR4 RIGHT
VR3 LEFT
VOLUME
VR1-1,2 TREBLE
VR2-1,2
TONE

8. Bias Frequency Adjustment

Settings:

- Tese point: TP 8
- OSC switch: "–"
- Adjustment location: OSC UNIT

Method:

Adjust OSC UNIT so that the frequency at test point is 48.5 kHz.

10. Bias

Settings:

- Adjust

* Others
adjust

Method:

Adjust
point

2. Tape Speed Adjustment

Settings:

- Test tape: TTA-111
- Adjustment location: SFR in motor

Method:

Playback the test tape and adjust so that the frequency is 3 kHz.

8. Bias Frequency Adjustment

Settings:

- Tese point: TP 8
- OSC switch: "_"
- Adjustment location: OSC UNIT

Method:

Adjust OSC UNIT so that the frequency at test point is 48.5 kHz.

10. Bias Current Adjustment

Settings:

- Adjustment location: L-ch·····SFR3
  R-ch·····SFR4

* Others setting same as in the bias trap coil adjustment.

Method:

Adjust SFR 3(4) so that the voltage at test point is 40 mV (400 μA).

9. Bias Trap Coil Adjustment

Settings:

- Test point: L-ch·····TP9, R-ch·····TP10
- OSC switch: "_"
- Adjustment location: L-ch ····L103
  R-ch ····L104

Method:

The voltage is brought to its maximum value.

5. Meter Indication Adjustment

Settings:

- Test tape: TTA-170
- Adjustment location: L-ch R175, 10 kΩ pattern.
  R-ch R176, 10 kΩ pattern.

Method:

Adjust the pattern so that left and right channels meter level is 0VU±1 dB.

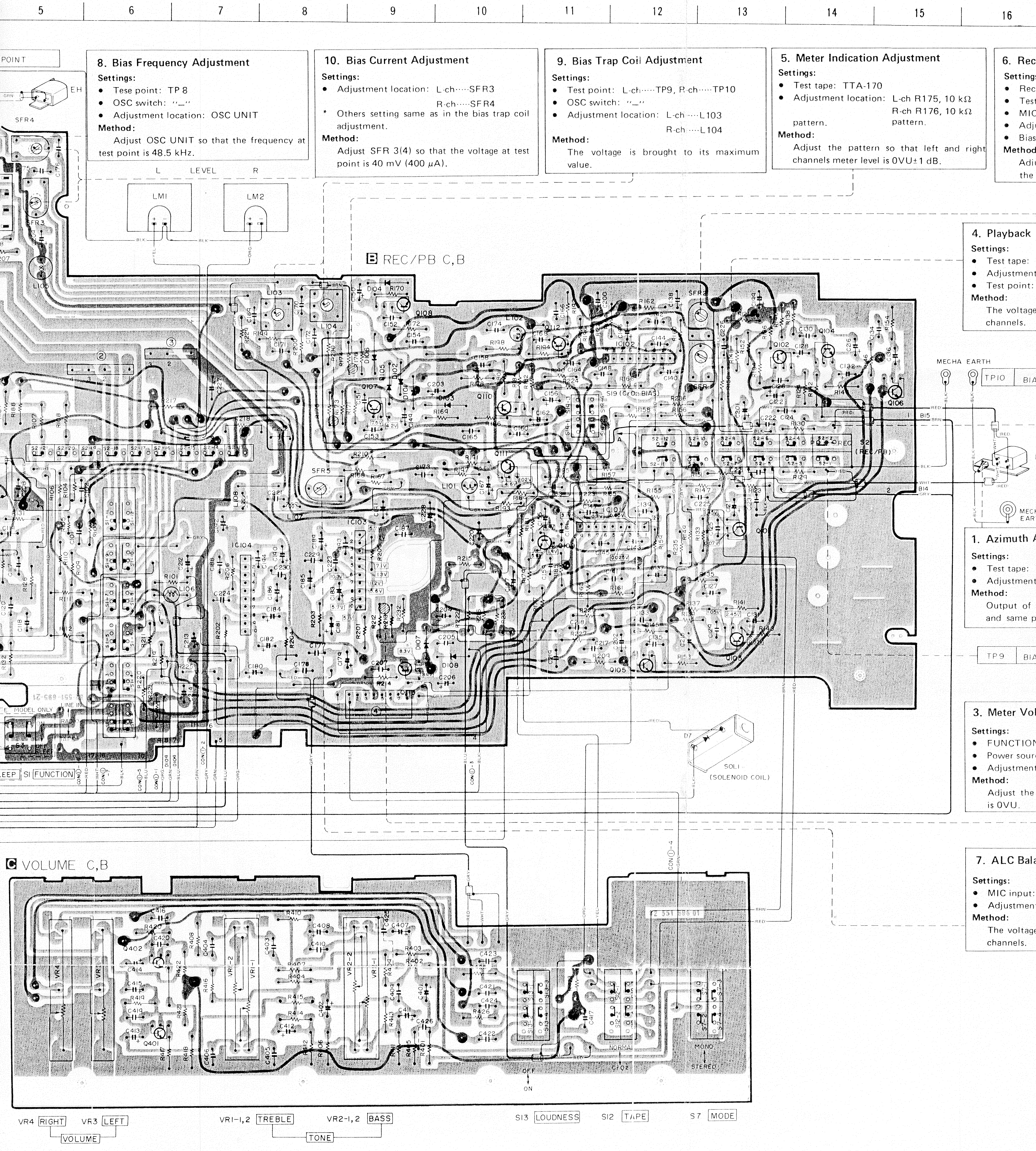
6. Rec

Settings:

- Rec
- Test
- MIC
- Adj
- Bias

Method:

Adiu
the


5
6
7
8
9
10
11
12
13
14
15
16
POINT
EH
GRN
SFR4
SFR3
L LEVEL R
LM1
LM2
BLK
YEL
ORG
B REC/PB C,B
L103
L104
L105
L106
L107
L108
L101
L102
SFR2
SFR5
IC101
IC102
IC103
IC104
Q101
Q102
Q103
Q104
Q105
Q106
Q107
Q108
Q110
Q111
S2 (REC/PB)
S9 (CrO₂ BIAS)
MECHA EARTH
TP10
BIA
MECH EAR
TP9
BIA
RED
BRN
WHT
GRY
BLU
B15
B14
D7
SOL1 (SOLENOID COIL)
MODEL ONLY
LINE IN
SLEEP
S1 FUNCTION
C VOLUME C,B
Q401
Q402
VR4
VR3
VR1-2
VR1-1
VR2-2
VR2-1
S13
S12
S7
NORMAL
CrO2
MONO
STEREO
OFF
ON
VR4 RIGHT
VR3 LEFT
VOLUME
VR1-1,2 TREBLE
VR2-1,2 BASS
TONE
S13 LOUDNESS
S12 TAPE
S7 MODE

4. Playback

Settings:

- Test tape:
- Adjustment
- Test point:

Method:

The voltage
channels.

1. Azimuth A

Settings:

- Test tape:
- Adjustment

Method:

Output of
and same p

3. Meter Vol

Settings:

- FUNCTION
- Power sour
- Adjustment

Method:

Adjust the
is 0VU.

7. ALC Bala

Settings:

- MIC input:
- Adjustmen

Method:

The voltage
channels.

NOTES (1) ■ B(+) Pattern ▩ Component side pattern ▨ Others patter

(2) The voltage is the reference value measured with a tester (20 K ohms/
An asterisk (*) indicates that the value was measured with a vacuum-tu

(3) The parts and the wires in blue are featured only with the TPR-9
the TPR-935E,K.

ent Adjustment

ocation: L-ch·····SFR3
R-ch·····SFR4
g same as in the bias trap coil

3(4) so that the voltage at test V (400 μA).

9. Bias Trap Coil Adjustment

Settings:

- Test point: L-ch·····TP9, R-ch·····TP10
- OSC switch: "—"
- Adjustment location: L-ch ····L103
  R-ch ····L104

Method:

The voltage is brought to its maximum value.

5. Meter Indication Adjustment

Settings:

- Test tape: TTA-170
- Adjustment location: L-ch R175, 10 kΩ pattern.
  R-ch R176, 10 kΩ pattern.

Method:

Adjust the pattern so that left and right channels meter level is 0VU±1 dB.

6. Recording Current Adjustment

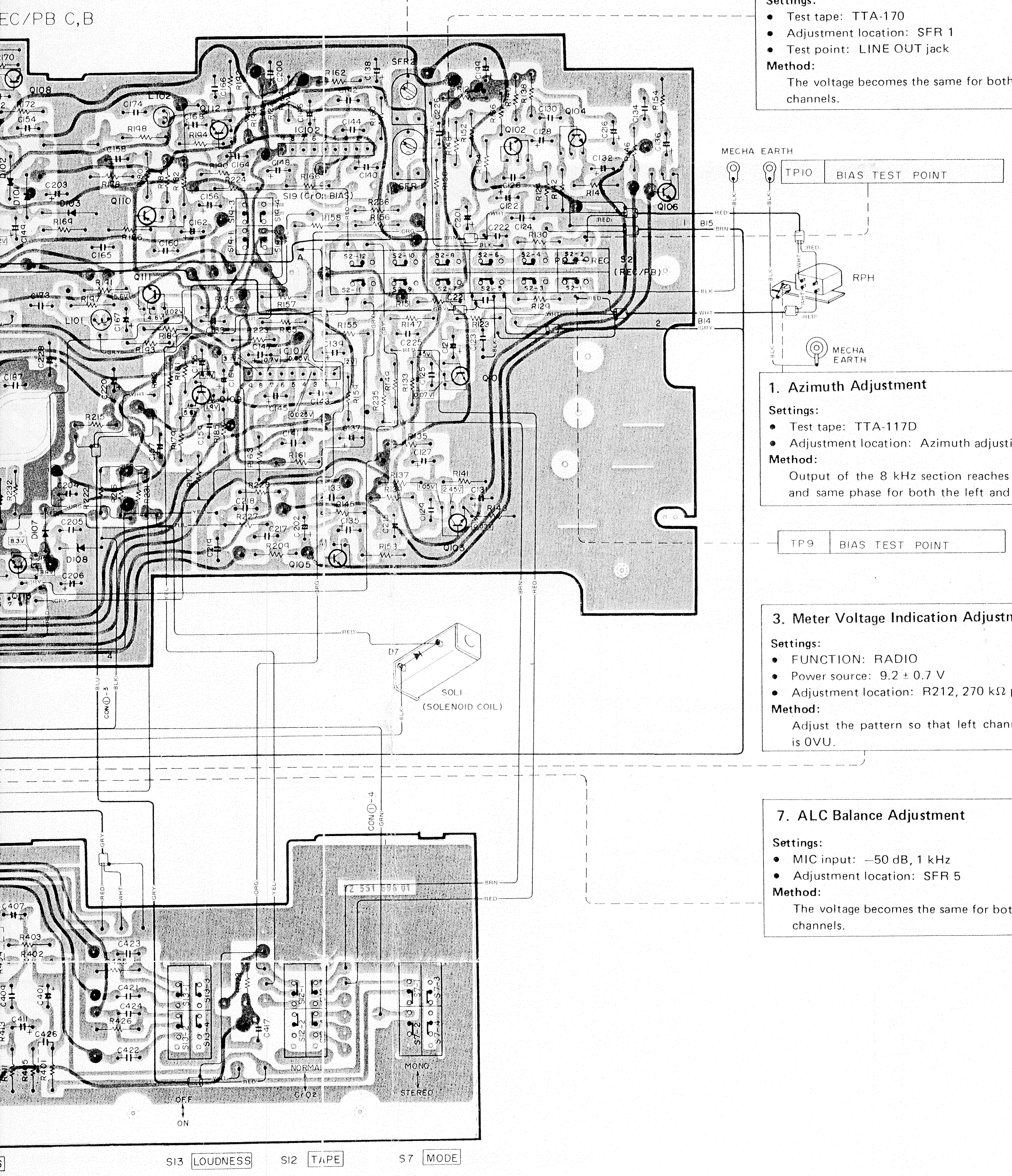
Settings:

- Recording mode
- Test point: L-ch·····TP 11, R-ch·····TP12
- MIC input: −80 dB, 1 kHz (0 dB = 1 V)
- Adjustment location: SFR 2
- Bias circuit pattern is cut

Method:

Adiust SFR 2 so that the voltage becomes the same for both left and right channels.

EC/PB C,B



4. Playback Level Adjustment

Settings:

- Test tape: TTA-170
- Adjustment location: SFR 1
- Test point: LINE OUT jack

Method:

The voltage becomes the same for both left and right channels.

1. Azimuth Adjustment

Settings:

- Test tape: TTA-117D
- Adjustment location: Azimuth adjusting screw.

Method:

Output of the 8 kHz section reaches the maximum and same phase for both the left and right channel.

3. Meter Voltage Indication Adjustment

Settings:

- FUNCTION: RADIO
- Power source: 9.2 ± 0.7 V
- Adjustment location: R212, 270 kΩ pattern

Method:

Adjust the pattern so that left channel meter level is 0VU.

7. ALC Balance Adjustment

Settings:

- MIC input: −50 dB, 1 kHz
- Adjustment location: SFR 5

Method:

The voltage becomes the same for both left and right channels.

NOTES (1) ▇ B(+) Pattern ▇ Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

(3) The parts and the wires in blue are featured only with the TPR-945E,K and are not provided with the TPR-935E,K.

ELECTRICAL MAIN PARTS

Symbol No.	Part No.	Description
≪TUNER CIRCUIT BOARD SECTION≫		
PCB-A	82-551-691-21	Tuner circuit board
IC1	87-027-285-01	IC, HA11251
IC2	87-027-430-11	IC, LA3361
Q1	87-026-107-01	FET, 2SK49F1
Q2,3,4,7	89-319-233-01	Transistor, 2SC1923 (O)
Q5,6	89-318-155-01	Transistor, 2SC1815 (GR)
Q8	89-110-153-01	Transistor, 2SA1015 (O)
Q9,10	89-309-455-01	Transistor, 2SC945L (Q)
Q11	89-404-006-01	Transistor, 2SD400 (F)
D1	87-017-004-01	Diode, SD117
D2	88-052-188-11	Diode, 1S188 (FM)
D3	87-027-431-01	Zener diode, RD-6.2E
L1	82-551-675-01	FM antenna coil, 2-1/2t
L2	87-006-017-01	FM coil, 2-1/4t
L3	87-005-101-01	FM choke coil, 2.2μH
L4	87-006-015-01	FM coil, 1-1/2t
L5	87-005-104-01	Coil, 20μH
L6	87-008-182-01	Coil, Quad
L7	82-551-679-01	SW antenna coil
L8,9	82-551-681-01	MW/LW bar antenna coil
L10	82-551-627-01	SW OSC coil
L11	82-551-676-01	MW OSC coil
L12	82-551-680-01	LW OSC coil
VC1~5 TC1~3	82-546-607-21	PVC
TC4~9	87-011-099-01	Trimmer
CF1,2	87-008-153-01	Ceramic filter
CFT1	82-494-786-01	AM ceramic filter transformer
IFT1	87-008-183-01	FM IFT
IFT2	87-008-187-01	AM IFT
LPF1	87-030-070-01	Low-pass filter
S11,14	82-551-673-01	Push switch (BAND SELECTOR, AFC)
SFR1	82-542-623-01	Semi-fixed resistor, 100kΩ-B
SFR2	87-021-592-01	Semi-fixed resistor, 1kΩ-B
SFR3	87-021-566-01	Semi-fixed resistor, 5kΩ-B
PIN-1	87-032-907-01	Pin, 7P
		< **Capacitors** >
C65,68	87-015-321-01	0.47μF 10V Aluminum solid
C67	87-015-316-01	1μF 10V Aluminum solid
C82	87-014-045-01	330pF PP
C64	87-014-057-01	1000pF PP
C83	87-014-034-01	110pF PP
C92	87-014-067-01	2700pF PP
C81	87-014-073-01	4700pF PP
≪REC/PB CIRCUIT BOARD SECTION≫		
PCB-B	82-551-695-21	REC/PB circuit board
IC101,102	87-027-176-01	IC,TA-7137P
IC103,104	87-027-316-01	IC,TA-7204P
Q101,102	89-322-406-01	Transistor, 2SC2240 (BL)
Q103,104	89-307-325-01	Transistor, 2SC732 (G)
Q105,106	89-318-154-01	Transistor, 2SC1815 (Y)
Q107,108	89-318-155-01	Transistor, 2SC1815 (GR)
Q109,110	89-110-154-01	Transistor, 2SA1015 (Y)
Q111,112	89-318-154-01	Transistor, 2SC1815 (Y)
Q113	89-404-683-01	Transistor, 2SD468 (C)
D101,102, 107	87-027-097-01	Diode, 1S1555
D103,104 105,106	88-052-188-11	Diode, 1S188 (FM)
D108	87-027-241-01	Zener diode, 05Z9.1L
L101,102	87-005-088-01	Micro inductor coil, 5.6 mH
L103,104	87-003-044-01	Bias trap coil
L105	82-401-661-01	Choke coil, 600μH
L106	87-003-039-01	Choke coil, 36μH
L107,108	81-245-319-01	Coil, 0.47μH
CP1	82-551-619-11	Bias OSC block
J1,2	87-032-741-01	DIN jack 5P w/switch (MIC, REC/PLAY)
J3,4	87-032-742-01	DIN jack 2P (EXT. SP)
J5	87-032-959-01	Jack, 6.3φ (PHONES)
S1	82-551-612-01	Lever switch (FUNCTION)
S2	82-551-609-01	Slide switch (REC/PB)
S2	82-551-682-01	Slide switch (REC/PB)
S3	82-551-611-01	Push switch (SLEEP) (E model only)
S8	82-431-604-01	Slide switch (OSC)
S19	87-031-381-01	Slide switch (CrO_2 BIAS)
SFR1,2	87-021-591-01	Semi-fixed resistor, 500Ω-B
SFR3,4	87-021-596-01	Semi-fixed resistor, 20kΩ-B
SFR5	82-542-612-01	Semi-fixed resistor, 200kΩ-B
PIN-3	87-032-943-01	Pin, 3P
PIN-2	87-032-944-01	Pin, 4P
PIN-4	87-032-918-01	Pin, 8P (TPR-945 only)
		< **Resistors** >
⚠ R221	87-029-060-01	33Ω 1/4W Fuse resistor (TPR-945 only)
⚠ R221	87-029-090-01	22Ω 1/4W Fuse resistor (TPR-935 only)
		< **Capacitors** >
C117,118	87-015-311-01	0.1μF 10V Aluminum solid
C179,180	87-015-319-01	0.22μF 10V Aluminum solid
C123,124	87-014-055-01	820pF PP
≪VOLUME CIRCUIT BOARD SECTION≫		
PCB-C	82-551-696-01	Volume circuit board
Q401,402	89-318-154-01	Transistor, 2SC1815 (Y)
VR1,2	82-551-621-01	Slide volume, 50kΩ-A (TREBLE, BASS)
VR3,4	82-551-683-01	Slide volume, 20kΩ-B (VOLUME)
S7,12,13	82-551-613-01	Lever switch (MODE, TAPE, LOUDNESS)
		< **Capacitors** >
C407,408	87-015-319-01	0.22μF 10V Aluminum solid
C401,402 411,412	87-015-430-01	0.47μF 25V Aluminum solid
≪SWITCH CIRCUIT BOARD SECTION≫		
PCB-E	82-551-692-01	Switch circuit board
≪POWER CIRCUIT BOARD SECTION≫		
⚠ PCB-G	82-551-608-01	Power circuit board (E model only)
⚠ PCB-G	82-551-684-01	Power circuit board (K model only)
D501	87-027-315-01	Encapsulated diode
⚠ J6,7	87-032-958-01	AC/DC jack
⚠ S17	87-031-466-01	Slide switch (VOLTAGE SELECTOR)
⚠ F1	87-035-190-01	Fuse, T 2A
	87-098-019-01	Fuse label, T2A
⚠ F2	87-035-145-01	Fuse, "T" 250 mA
	87-098-010-01	Fuse label, "T" 250 mA
	87-033-147-01	Fuse clamp
≪MS CIRCUIT BOARD SECTION≫ = TPR-945 ONLY		
PCB-H	82-553-606-01	MS circuit board
IC1,2	87-027-435-01	IC, 4069
IC3	87-027-298-01	IC, 4001
IC4	87-027-413-01	IC, 4029
IC5	87-027-433-01	IC, 4028
Q1~13	89-318-154-01	Transistor, 2SC1815 (Y)
Q14	89-404-006-01	Transistor, 2SD400 (F)
D1~6	87-027-097-01	Diode, 1S1555
D8~14	82-553-603-01	Light emitting diode
D15,16	82-553-602-01	Light emitting diode
S6,16	87-031-496-01	Micro switch (REC MUTE, MS)
SFR1	87-021-588-01	Semi-fixed resistor, 200kΩ-B
		< **Capacitors** >
C3	87-015-518-01	1.5μF 25V Tantalum
C7	87-015-306-01	4.7μF 10V Tantalum
C8,12	87-015-393-01	10μF 16V Tantalum
≪MISCELLANEOUS≫		
⚠ T1	82-551-626-01	Power transformer
D109	87-027-218-01	Light emitting diode, SR-105D (FM STEREO, OPERATE)
RPH	87-046-159-01	REC/PB head
EH	87-046-127-01	Erase head
ECM1,2	85-868-025-01	ECM, CMU-9-RI
LM1	87-040-114-01	Level meter L
LM2	87-040-115-01	Level meter R
M1	87-045-132-01	Motor, MM1-6
SOL1	82-553-604-01	Solenoid (TPR-945 only)
D7	87-027-083-01	Diode 1S1885 (TPR-945 only)
SP1,2	82-551-697-01	Speaker (Tweeter)
SP3,4	82-551-615-01	Speaker (Woofer)
S4,5	87-031-493-01	Micro switch (MOTOR, POWER)
S9	87-031-393-01	Leaf switch (AUTO STOP)
S10	82-533-628-01	Slide switch (ANT SELECTOR)
S18	87-031-418-01	Micro switch (MUSIC SENSOR) (TPR-945 only)
S21	87-031-493-01	Micro switch (DC POWER) (K model only)
⚠ S22	87-031-467-01	Push switch (AC POWER) (K model only)
J8	82-488-656-01	FM DIN antenna terminal
	87-033-026-01	Terminal strip, 1L-3P
CON-3	82-551-601-01	Connector ass'y, 3P (E model only)
CON-2	82-551-603-01	Connector ass'y, 4P
CON-7	82-551-654-01	Connector ass'y, 7P
CON-4	82-553-601-01	Connector ass'y, 8P (TPR-945 only)
		< **Capacitor** >
C1,2	87-015-599-01	3.3μF 50V Electrolytic BP

⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

Description
N ≫
t board
1
F1
2SC1923 (O)
2SC1815 (GR)
2SA1015 (O)
2SC945L (Q)
2SD400 (F)
17
38 (FM)
e, RD-6.2E
a coil, 2-1/2t
1/4t
coil, 2.2μH
1/2t
a coil
r antenna coil
il
oil
il
ter
ic filter transformer
ilter
h (BAND
R, AFC)
l resistor, 100kΩ-B
l resistor, 1kΩ-B
l resistor, 5kΩ-B
rs >
10V Aluminum solid
10V Aluminum solid
PP
PP
PP
PP
PP
ION ≫
ircuit board
37P
04P
, 2SC2240 (BL)
, 2SC732 (G)
, 2SC1815 (Y)
, 2SC1815 (GR)
, 2SA1015 (Y)
, 2SC1815 (Y)
, 2SD468 (C)
1555
188 (FM)

Symbol No.	Part No.	Description
D108	87-027-241-01	Zener diode, 05Z9.1 L
L101,102	87-005-088-01	Micro inductor coil, 5.6 mH
L103,104	87-003-044-01	Bias trap coil
L105	82-401-661-01	Choke coil, 600μH
L106	87-003-039-01	Choke coil, 36μH
L107,108	81-245-319-01	Coil, 0.47μH
CP1	82-551-619-11	Bias OSC block
J1,2	87-032-741-01	DIN jack 5P w/switch (MIC, REC/PLAY)
J3,4	87-032-742-01	DIN jack 2P (EXT. SP)
J5	87-032-959-01	Jack, 6.3φ (PHONES)
S1	82-551-612-01	Lever switch (FUNCTION)
S2	82-551-609-01	Slide switch (REC/PB)
S2	82-551-682-01	Slide switch (REC/PB)
S3	82-551-611-01	Push switch (SLEEP) (E model only)
S8	82-431-604-01	Slide switch (OSC)
S19	87-031-381-01	Slide switch (CrO_2 BIAS)
SFR1,2	87-021-591-01	Semi-fixed resistor, 500Ω-B
SFR3,4	87-021-596-01	Semi-fixed resistor, 20kΩ-B
SFR5	82-542-612-01	Semi-fixed resistor, 200kΩ-B
PIN-3	87-032-943-01	Pin, 3P
PIN-2	87-032-944-01	Pin, 4P
PIN-4	87-032-918-01	Pin, 8P (TPR-945 only)
		< **Resistors** >
⚠ R221	87-029-060-01	33Ω 1/4W Fuse resistor (TPR-945 only)
⚠ R221	87-029-090-01	22Ω 1/4W Fuse resistor (TPR-935 only)
		< **Capacitors** >
C117,118	87-015-311-01	0.1μF 10V Aluminum solid
C179,180	87-015-319-01	0.22μF 10V Aluminum solid
C123,124	87-014-055-01	820pF PP

≪VOLUME CIRCUIT BOARD SECTION≫

PCB-C	82-551-696-01	Volume circuit board
Q401,402	89-318-154-01	Transistor, 2SC1815 (Y)
VR1,2	82-551-621-01	Slide volume, 50kΩ-A (TREBLE, BASS)
VR3,4	82-551-683-01	Slide volume, 20kΩ-B (VOLUME)
S7,12,13	82-551-613-01	Lever switch (MODE, TAPE, LOUDNESS)
		< **Capacitors** >
C407,408	87-015-319-01	0.22μF 10V Aluminum solid
C401,402 411,412	87-015-430-01	0.47μF 25V Aluminum solid

≪SWITCH CIRCUIT BOARD SECTION≫

PCB-E	82-551-692-01	Switch circuit board

≪POWER CIRCUIT BOARD SECTION≫

⚠ PCB-G	82-551-608-01	Power circuit board (E model only)
⚠ PCB-G	82-551-684-01	Power circuit board (K model only)
D501	87-027-315-01	Encapsulated diode
⚠ J6,7	87-032-958-01	AC/DC jack
⚠ S17	87-031-466-01	Slide switch (VOLTAGE SELECTOR)
⚠ F1	87-035-190-01 87-098-019-01	Fuse, T 2A Fuse label, T2A

Symbol No.	Part No.	Description
⚠ F2	87-035-145-01 87-098-010-01 87-033-147-01	Fuse, "T" 250 mA Fuse label, "T" 250 mA Fuse clamp

≪MS CIRCUIT BOARD SECTION≫ = TPR-945 ONLY

PCB-H	82-553-606-01	MS circuit board
IC1,2	87-027-435-01	IC, 4069
IC3	87-027-298-01	IC, 4001
IC4	87-027-413-01	IC, 4029
IC5	87-027-433-01	IC, 4028
Q1~13	89-318-154-01	Transistor, 2SC1815 (Y)
Q14	89-404-006-01	Transistor, 2SD400 (F)
D1~6	87-027-097-01	Diode, 1S1555
D8~14	82-553-603-01	Light emitting diode
D15,16	82-553-602-01	Light emitting diode
S6,16	87-031-496-01	Micro switch (REC MUTE, MS)
SFR1	87-021-588-01	Semi-fixed resistor, 200kΩ-B
		< **Capacitors** >
C3	87-015-518-01	1.5μF 25V Tantalum
C7	87-015-306-01	4.7μF 10V Tantalum
C8,12	87-015-393-01	10μF 16V Tantalum

≪MISCELLANEOUS≫

⚠ T1	82-551-626-01	Power transformer
D109	87-027-218-01	Light emitting diode, SR-105D (FM STEREO, OPERATE)
RPH	87-046-159-01	REC/PB head
EH	87-046-127-01	Erase head
ECM1,2	85-868-025-01	ECM, CMU-9-RI
LM1	87-040-114-01	Level meter L
LM2	87-040-115-01	Level meter R
M1	87-045-132-01	Motor, MM1-6
SOL1	82-553-604-01	Solenoid (TPR-945 only)
D7	87-027-083-01	Diode 1S1885 (TPR-945 only)
SP1,2	82-551-697-01	Speaker (Tweeter)
SP3,4	82-551-615-01	Speaker (Woofer)
S4,5	87-031-493-01	Micro switch (MOTOR, POWER)
S9	87-031-393-01	Leaf switch (AUTO STOP)
S10	82-533-628-01	Slide switch (ANT SELECTOR)
S18	87-031-418-01	Micro switch (MUSIC SENSOR) (TPR-945 only)
S21	87-031-493-01	Micro switch (DC POWER) (K model only)
⚠ S22	87-031-467-01	Push switch (AC POWER) (K model only)
J8	82-488-656-01 87-033-026-01	FM DIN antenna terminal Terminal strip, 1L-3P
CON-3	82-551-601-01	Connector ass'y, 3P (E model only)
CON-2	82-551-603-01	Connector ass'y, 4P
CON-7	82-551-654-01	Connector ass'y, 7P
CON-4	82-553-601-01	Connector ass'y, 8P (TPR-945 only)
		< **Capacitor** >
C1,2	87-015-599-01	3.3μF 50V Electrolytic BP

⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.